

May 1985

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ISSUE

ANNIVERSARY  
COMPETITION



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Link to Giant Mainframes and network to thousands of Micro users via your 'phone with free Modems and Comms software in the British Telecom Modem competition.

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#### For the 5 questions 'phone

01-627 3000 or  
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031-225 8999

#### To get the Tiebreaker Sentence 'phone

01-627 1199 or  
0532 455030 or  
0632 324444

Complete the entry form using your skill and judgement, and send it off in the next post.

#### RULES OF THE BRITISH TELECOM MODEM COMPETITION

- 1) The dial-in is available from 6pm Monday 22nd April to midnight Sunday 5th May 1985, when the competition closes.
- 2) Entries must be postmarked the next working day after the questions and tiebreaker were obtained.
- 3) Entries can only be made on the official entry forms and become the property of British Telecommunications plc.
- 4) The competition is open only to residents of the United Kingdom over the age of 18 years. Employees of the Network Marketing Unit of British Telecommunications plc and PARKER REDMILE LTD. and their dependants are excluded. Only one winning entry per household.
- 5) Entries not reaching the competition address before midnight on Thursday 9th May 1985 will not be considered.
- 6) A list of winners will be provided at the competition address. Please send an SAE if you wish to receive it.
- 7) The winners will be picked as follows from entries received on time and properly completed -  
The entries for each type of prize pack with all correct answers to the 5 questions and with the tiebreaker sentences judged most apt and humorous by the competition organisers will be chosen, subject to the stock of appropriate prize packs.
- 8) The decision of the competition organisers is final and no correspondence will be entered into. Winners will be notified automatically.
- 9) British Telecommunications plc offers winners requesting BT 'phone socket conversion on entry forms to waive the charge normally made for such work.
- 10) Details of how to get on Prestel/Micronet 800/Telecom Gold will be sent to winners. Subscriptions not included in prize.

### OFFICIAL ENTRY FORM

#### A. Your answers:

Q 1 .....  
Q 2 .....  
Q 3 .....  
Q 4 .....  
Q 5 .....

#### B. Tiebreaker Sentence complete (25 words or less in total):

" .....  
..... "

#### C. If I win, I would like the prize pack for the

- ☐ SPECTRUM/SPECTRUM +  
☐ BBC MODEL B (Tick Choice)  
☐ COMMODORE 64

#### D. My home telephone line (\* Delete as appropriate)

- (a) already has a square-type BT 'phone socket \* or  
(b) would need converting to square-type BT 'phone socket \*

If (b), the person renting the line from British Telecom must fill in this declaration -  
If this is a winning entry, I agree to ask British Telecom to convert my line to square-type BT 'phone socket at a convenient date before 1st July 1985. My line is on Residential rental, is not a coinbox and is not shared service.  
I understand British Telecom will not charge for doing the work.

Name ..... (Block Capitals)

Telephone number .....

Signature .....

Date ..... 1985

E. I have read the rules of the British Telecom Modem competition and agree to abide by them. I am over 18 years old.

Signature of entrant .....

Date ..... 1985

Name ..... (Block Capitals)

Address .....

Postcode .....

#### POST IMMEDIATELY TO:-

British Telecom Modem Competition  
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CR4 2X1

SP

(Postage stamp required)

**WINNERS WILL BE NOTIFIED AUTOMATICALLY**



**W**ELCOME to our third birthday issue. The first issue of *Sinclair Programs* went on sale in May 1982, and contained forty programs written for the ZX-81 and ZX-80.

A year later we became a monthly, rather than a bi-monthly magazine and, since then, we have gone from strength to strength, expanding our editorial, and constantly improving the quality of our listings.

This month we are pleased to be able to offer you the chance of attending the first ever **Sinclair Programs computer holiday**. We have linked up with **Dolphin holidays**, who are computer camp specialists, to produce a very special holiday for Sinclair Programs readers.

Instruction at the camps is by experts, everyone will be able to use either a ZX-81 or a Spectrum and will have access to an enormous collection of hardware ranging from speech recognition systems to robot buggies.

For those people unable to attend the special **Sinclair Program** we have negotiated cut price rates on other Dolphin Computer Holidays. There are special reductions on both Basic and Advanced courses. Turn to page 42 for more details on this great offer.



Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6★isp" means six inverse spaces and "(g4:4★i4:g3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.

**Editor**  
Rebecca Ferguson



**Staff writer**  
Colette McDermott

**Design/Illustration**  
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Neil Wood

**Sinclair Programs is published monthly by EMAP Business and Computer Publications.**

Telephone 01-251 6222

If you would like your original programs to be published in Sinclair Programs, please send your contributions, which must not have appeared elsewhere, to:

Sinclair Programs,  
EMAP,  
Priory Court,  
30-32 Farringdon Lane,  
London EC1R 3AU

Programs should be on cassette. We cannot undertake to return them unless a stamped, addressed envelope is included. We pay £25 for the copyright of listings published and £10 for the copyright of listings published in the Beginners' section.

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**Cover Illustration—Craig Kennedy**



## Interactive BASIC Programming for 48K ZX Spectrum & Spectrum + ATTENTION ALL SPECTRUM USERS!

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- \* You'll learn about graphics (see some on this ad), colour, sound, motion, system variables, menus and much more, explained simply.
- \* Problems are given with hints and answers in the form of programs that are put into BASIC for you to look at, run and alter.
- \* You'll learn how to write your own games (by way of examples) and how to put your machine to serious use (e.g. graphs, problem solving, filing system).
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- Popular Computing Weekly 7/3/85

Britain is the Software Capital of the World - far superior to the U.S.A. The computer revolution is just beginning and as the emphasis shifts from hardware to software WE are best placed to shape the future. The writing's on the wall: get actively involved while the industry is young.

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3	BASKETBALL	20	SOLAR SHIP	38	INFERNO
4	FROGGER	21	TEN PINS	39	NIM
5	BREAKOUT	22	CARS	40	VOYAGER
6	CRUSHER	23	STOMPER	41	SKETCH PAD
7	STARTRK	24	PINBALL	42	BLITZ
8	MARTIAN	25	CAVERN	43	FISHING MISSION
9	KNOCK OUT	26	LASER	44	MYSTICAL
10	ALIEN ATTACK	27	ALIEN	45	DIAMONDS
11	LUNAR LANDER	28	CARGO	46	GALAXY DEFENCE
12	MAZE EATER	29	THE RACE	47	CYPHER
13	MICROTRAP	30	THE SKULL	48	JETMOBILE
14	MOTORWAY	31	ORBIT	49	BARREL JUMP
15	LABYRINTH	32	MUNCH	50	ATTACKER
16	SKITTLES	33	BOWLS		
17	RACE TRACK	34	RAIDERS		
		35	FIELD		

50 GAMES ALSO AVAILABLE FOR ZX81

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## More than Sufficient

FOLLOWING the repeated failure of my ZX-81 keyboard I decided to try to get hold of a new keyboard and replace it myself. First of all I phoned Sinclair Research. They could not help me, but gave me the number of CPC in Preston, who supply many Sinclair computer parts. However, when I phoned them I was told that, due to the fact that they had a minimum order charge, it would cost me £9.60, for four keyboards!

As I have only one ZX-81 I want only one keyboard. I now have four options: buy four keyboards, buy another sort of keyboard for around £30, send my computer to a repair shop to do a job that I could do myself, or keep my broken keyboard.

Is there anything that anyone can do to help me to get this spare part which should only cost a little over £2?

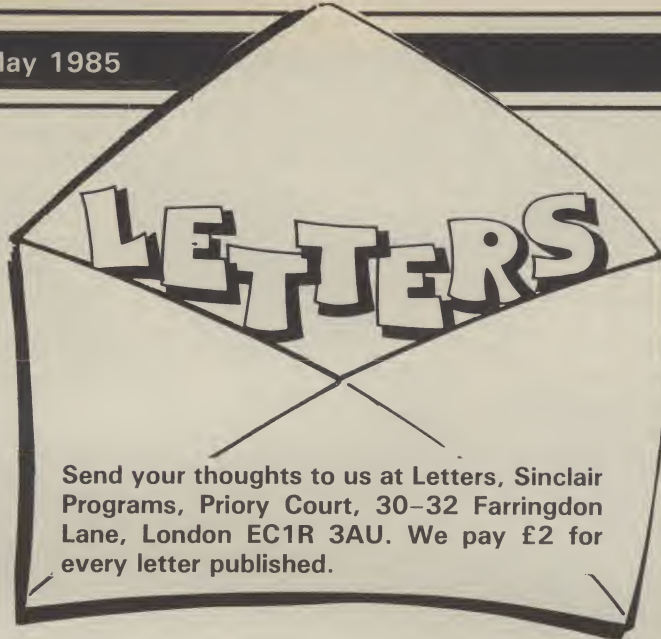
**Peter Sanson,**  
Wisbech, Cambs.



## Stuck on the roof

CAN ANYONE help me with **Jet Set Willy**?

My difficulty centres around the collection or, in my case, non-collection of the four bottles which are located on the Conservatory Roof. What I want to know is: what route do I have to take to gain access to the platform from which you



jump up to collect the four bottles? I have attempted what I feel to have been every conceivable route, and have got absolutely nowhere.

For example, any attempt to jump across from the sloping section of the conservatory roof invariably results in an undignified and remaining-life-removing plunge through the Orangery into the Swimming Pool.

**Peter Lawrence,**  
Capel St Mary, Suffolk  
• Can anyone out there help Peter? Let us know if you can reach those four bottles.

## Beat that Ghostbusters

I AM dropping you a quick line to say that I have just scored my best amount of money on **Ghostbusters**. It is \$855,900, and I was wondering whether anyone has beaten this.

I have also found two bugs in the game. The first one is that, when you are driving your car

and a roamer is on the far left hand side, you cannot suck it up. The second one is that, after you have listened to the logo once, you don't get the words the next time.

Thank you for a brilliant magazine.

**Andy Herrod,**  
Leatherhead, Surrey.

## Total disagreement

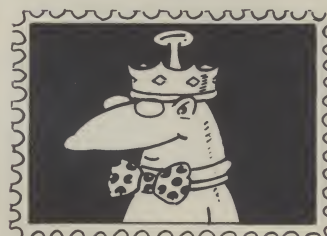
I TOTALLY disagree with your review on **Match Day**. I think that it is probably the best game on the market. You only rated it at 50%. I would have rated it at at least 90%.

**Gavin Wilding,**  
Thorndon, Suffolk

YOUR review of **Match Day** in March 1985 is totally wrong, and might put off would-be buyers. It is worth at least 90%, and is one of the best Spectrum games out. There are many others who would agree with me. It is one of those games which take a lot

of mastering, but once this is done it becomes comparatively easy. The graphics for this game are brilliant, and the movement is authentic, especially the goalkeeper.

**Stephen Luckin,**  
Littlehampton, Sussex



I AM writing to say just how annoyed I am about your review of **Match Day** by Ocean. How could you only give it 50%, the game is fantastic. My friends and I are always playing it. Looking through your magazine we see **Match Day** and read on in the hope of a good review, but we find nothing but comments on what is missing and not what is there. So, whoever reads this letter, **Match Day** is definitely value for money.

**Bradley Swift,**  
Rochdale, Lancs.

## Congrats all round

BRILL, fab, outstanding: what is it? The new-look **Sinclair Programs**, of course. The new magazine is absolutely incredible. Congrats to all, and keep up the good work.

**Michael Meagher,**  
Rosecrea, Ireland.  
• Obviously a man of taste.

Please complete this form and enclose it with any program which you send to us for possible publication.

To: Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.  
I enclose.....Program(s) for the .....computer.  
I guarantee that each program submitted is my original work.  
Signed.....  
Name.....  
Address.....



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INSIDE THE MAY ISSUE ...

QL's Dilemma: PC or home micro?  
 Brother EP44 and TC600 interfacing  
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## AN APPOINTMENT NOT TO BE MISSED EVERY MONTH!

1984

Tuesday  
280-78 Week 42

16

**Sinclair User** magazine hits the street on the 16th of every month packed with enough material to keep both you and your Sinclair machine fully occupied until the same time next month.

**Sinclair User** magazine, is devoted entirely to the Sinclair ZX81 and Spectrum. Everything you need to know about the latest peripherals and software releases, as well as letters, book reviews, program listings and competitions. Plus special sections for beginners business and education. We even have a special telephone 'hotline' for those problems that just can't wait.

No wonder **Sinclair User** is the UK's top selling Sinclair magazine.

Available from your newsagents now, only 85p

September 1984

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# A NEW, IMPROVED ZX81 KEYBOARD AT THE SAME OLD PRICE. £9.95.



There's only one thing wrong with the ZX81. Its keyboard.

Or rather its lack of one.

Since it's flat your fingers don't feel as if there's any response to the pressure put on the keys.

ZX81 KEYS

FILESIXTY KEYS

In other words, you're not quite sure which keys you've pressed until the screen actually tells you.

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It matches the ZX81 perfectly. And the keys give a real calculator-type feel.

To set it up all you have to do is peel off the adhesive backing and stick it on top of the ZX81 touchpad.

Because no tampering or soldering is involved the guarantee is not affected. And it will last for up to 3½ million operations.

But our keyboard doesn't just come loaded with features. With it comes a separate overlay and a set of coloured stick-on labels to make game playing easier.

It's yours for the original price of £9.95.

Whichever way you look at it, we think you'll agree that it's a keyboard that's quite outstanding.

Orders to Filesixty Ltd., FREEPOST, London W9 2BR.  
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# NEWS

## Name game

**F**EBRUARY'S competition was held to decide the most apt name for a creature from Fantasy Software's game, **Backpackers Parts 1 and 2**.

Vincent Burne, Richard Church, David Green, Nagesh Verma, Daher Patrick, Mr I. F. Watts, Andrew Hunt, James Hill, Philip Marston, Neil Gallichan, Jonathan Clark, Duncan McAdam, Paul Colledge,



Fifty winners were chosen, and while we cannot list all the wonderful and hilarious names we think that some deserve a mention:

Tartanpunkas, Multi coloured Skunk Punk, Punkaggis, or perhaps Punk-u-Pine.

The winners, who will receive parts 1 and 2 of the Backpackers game, are:

Craig Herriot, P. Carroll, R. G. Hawley, Nathan Merrills, Jonathan Brewster,

Adam Ledger, Ken Senaei, Mr C. J. Haylett, William Turner, Andrew Smellie, Kevin Bradley, Martin Greenaway, Darren Purcell, Richard Harrison, Neil Drew, Andrew Morton, A. Downs, Stephen Price, J. Gordon, N. Bygate, R. Bayle, Robert Ward, Paul Cox, John Kemp, Mark Thornton, Glenn Field, Philip Evans, Innes Ferguson, J. Downton, Mark Sorrell, H. R. Hawkins, Agustin Malave, David MacFarland, Ed Mansell, Gavin Peebles, Denise Jennians, Ross Morley.

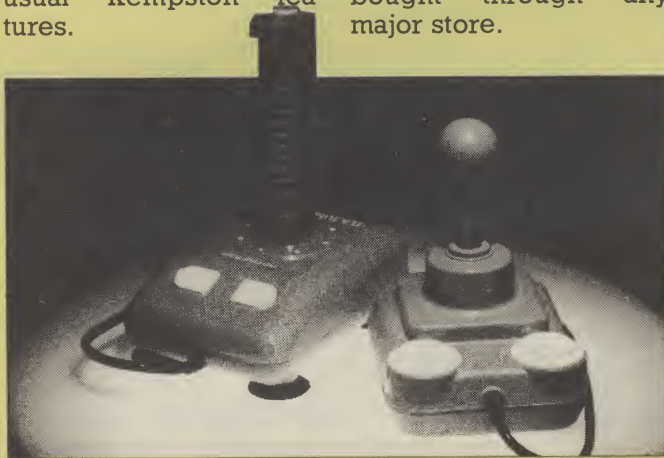
## Good move

**K**EMPSTON Micro Products have launched their new range of joysticks and interfaces, which went on sale on March 1st.

For £11.95 the **Formula 2** joystick is the cheaper of the two, the **Formula 1** will cost £16.95. They will have self centering and improved positive action in addition to the usual Kempston features.

The new interfaces begin at £9.95 for the **Kempston Joystick**, £18.95 for the **Pro joystick** and £39.95 for the **Centronics 'E' interface**. They will have more robust mouldings for increased durability and all will be compatible with the Spectrum Plus.

The new range can be bought through any major store.



## DISC-COVERY

**O**PUS Supplies launched a new range of disc drives in March which are compatible with both Spectrum and Spectrum Plus. They regard their new system as the first to seriously threaten the cassette loading systems.

The Discovery 11, which has duel drive capabilities can be bought for £329.95, or you can start off with the Discover 1 which, at £199.95, has a single disc drive and then upgrade it to a duel drive with the Discovery plus, which

costs £139.95. The Discovery systems will only be available through Boots.

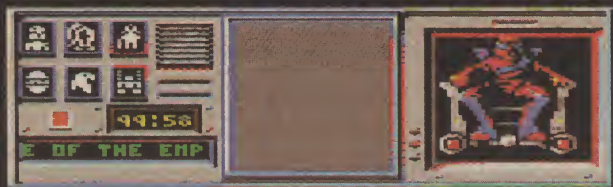
Boots have commissioned six top software houses to produce the first programs for the Discovery range. These will be on three and a half inch discs, costing £14.95 each. The programs and companies involved are: Activision, **Designer Pencil**, Micro-mega with three games on one disc, **Jasper**, **Code Name Mat** and **Kentilla**, Melbourne House with two games,

**Sports Hero** and **Mugsy**, Hewson Consultants with two, **Heathrow Air Traffic Control** and **Technician Ted**, Data Base Publications, **Mini Office**, a program with

word processing graphics and a data base; and Romantic Robot, **Advanced utility and file handling**. They are all now available, and more programs are promised.







- PRESS F1 FOR KEYBOARD
- PRESS F3 FOR DIGITAL JOY STICK
- PRESS F5 FOR ANALOG JOY STICK
- PRESS F7 FOR LIGHT PEN

## PARTING COMPANY

**B**YOND Software have decided to split their publishing operation into two separate companies. Adventure and strategy games will continue to be produced under the old Beyond Software label, while arcade games will be under the new label. Their first game, which remains unnamed, will be released in June.

**Shadow Fire**, released

in March, has had a unique cassette tuner developed to enhance its playability. It enables you to change the parameters and characters within the game, thereby extending the games usage. The tuner will cost about £2 to £2.70 and is available through Beyond Software, Lector Court, 151 Farringdon Road, London EC1R 3AD.

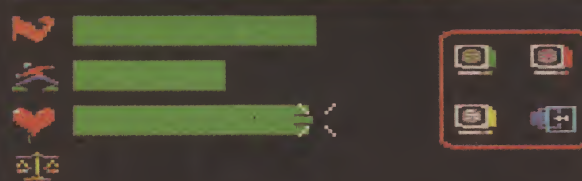
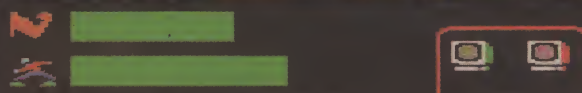


## Digital decide on double release

**D**IGITAL Integration are launching two new games which are due out soon.

**Tomahawk** is a sequel to **Fighter Pilot** and it is

expected to be equally popular. The second new game is **T. T. Racer** which is a motorcycle simulation game. Prices have yet to be decided.



## ZX-81 reviver

**S**OFTWARE Farm will launch their new program **Spectrumiser** at the end of April. It is a high resolution graphic program which enables the ZX-81 graphics to ob-

tain the same quality and standard as those on the Spectrum. It also has the ability to convert basic into machine code. **Spectrumiser** will retail at £5.95.

## A STAR IS BORN

**M**ELBOURNE House are also launching a new game, **Starion**, which was due for release at the end of March.

It will cost around £7.95 and is described as "A space epic" by Paula Byrne from Melbourne House. "It has stunning graphics and involves a space pilot travelling through over 243 different scenes. The game also has exploding space ships which when disintegrated form letters which involve you in a puzzle running in conjunction with the main plot of the game."



## Getting Hooked

**O**CEAN have a new game coming out at the end of April called **World Series Baseball**.

Imagine were originally going to market the game, but as Ocean have bought the title of the company they decided to launch it under their own title.

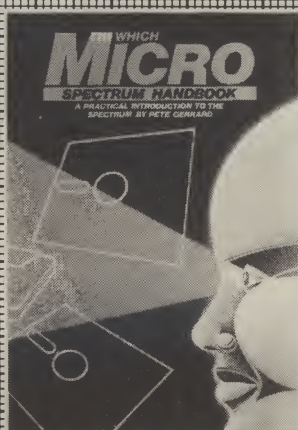
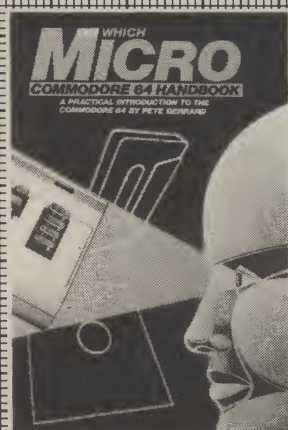
It is a sports simulation and will cost £6.95.



# WHICH MICRO

COMMODORE 64 HANDBOOK

SPECTRUM HANDBOOK



Britain's two most popular personal computers, the Commodore 64 and Spectrum are covered from basic to semi-expert in **Which Micro Magazine's Handbooks**.

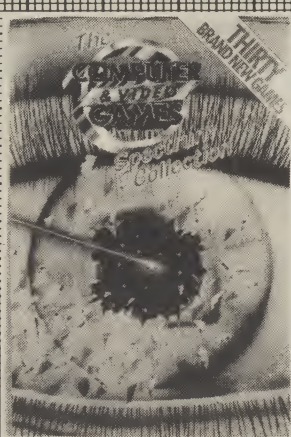
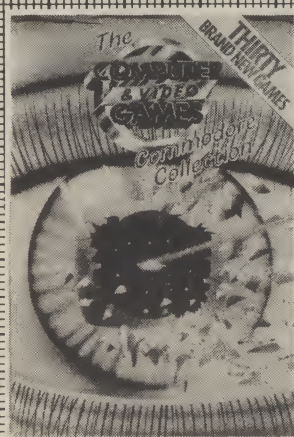
Author **Pete Gerrard**, a regular columnist for **Which Micro**, has put together an accurate and practical guide to both computers, at £4.99 per book.

Many programs are included and both 160-page books are spiral bound for easy use and are available in all good bookshops from November or direct through your letterbox by sending to EMAP Books, Bushfield House, Orton Centre, Peterborough PE2 0UW.

Commodore  
Collection

COMPUTER  
& VIDEO  
GAMES

Spectrum  
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# GET LOST!

## EMERALD ISLE

**L**LEVEL 9 have done it again. Their new adventure, **Emerald Isle**, is superb. Jam-packed full of problems, pictures, clues and scenarios, Emerald Isle is a definite winner.

You begin the adventure hanging from a parachute, which is the first of a series of tricks played on the experienced adventurer. Surely you have been here before, some other time, some other game? Escape from the parachute leads to a maze. Again, experienced adventurers will cry "Easy", but a little too soon. You see, there is no way of mapping this maze, objects dropped within it are lost forever, and your compass is no use at all.

The game appears to adapt itself to your skill

level. For example, everyone who plays adventures frequently knows that you do not go into the dark without a light. Beginners will stumble blindly through, and find themselves on the right track again.

The scope of the game is enormous. Leave the jungle, cross the city, take a train journey and then venture through the mountain and you could still only have scored 30/1000.

Emerald Isle is a brilliant adventure, buy it at once. Produced for the 48K Spectrum by Level 9 Computing, 229 Hughenden Road, High Wycombe, Bucks.

**Price: £9.95**

**Game type: Adventure**

**Rating: 90%**



## STAY KOOL

**W**HAT HAS happened to Bug Byte? There was a time when you could rely on them for excellent games. Their latest one, **Stay Kool**, is no fun at all. In the face of the excellent new releases on the market this month it is worse than no fun, it is pathetic.

In another lame take off of the **Jet Set Willy** theme you move from room to room collecting

objects. The problems are ingenious, the rooms are nicely named, the graphics are not bad, but the idea is stale, stale, stale.

Stay Kool is produced for the 48K Spectrum by Bug Byte, Mulberry House, Canning Place, Liverpool.

**Price: £6.95**

**Game type: Arcade**

**Rating: 35%**



## WIZARD'S LAIR

**O**NCE UPON a time, well over a year ago, a company called Ultimate brought out two games called **Atic Atac** and **Sabre Wulf** for the Spectrum. Now Bubble Bus have produced **Wizard's Lair**, which bears a very very strong resemblance to both games. Atic Atac meets Sabre Wulf.

It is great fun. The graphics are excellent. Move from room to room on a variety of levels, cross the river which flows through the rooms and caverns, avoid the knight and the grim reaper, avoid or zap the energy sapping bad-dies, collect all objects you find, collect the four parts of the Great Lion, find the exit, and es-

cape. Phew.

Bubble Bus cannot claim originality. What they can claim is that



they have produced a very good game. It is fast-moving, it is difficult, there is lots to see and lots to do.

Produced for the 48K Spectrum by Bubble Bus.

**Price: £6.99**

**Game type: Arcade**

**Rating: 72%**



## EVERYONE'S A WALLY

**T**HE WALLY series goes from strength to strength. The follow up to the excellent **Pyjamarama**, **Everyone's a Wally** is even better, and even more difficult.

You move Wally, or Tom or Dick or Harry or Wilma around the screen, trying to complete their appointed tasks. There are roads and shops and houses and building sites, all drawn in wonderful detail, for you to visit. All these locations seem to be crammed full of objects, and doubtless the majority of these objects has a use, if you could only work out what it is.

The trouble is, the

other characters will not stay still. For example, you may decide that the patch beneath the docks is the one way to stop the leak in the fountain. So you make your way to the docks, avoid the shark, and find that the patch is gone, and a massive book is in its place. It strikes you that you just saw Wilma leaving, so you track down Wilma, swap from Wally to Wilma, and find that she is not carrying the patch. However, when, by chance you walk into the house, there is the patch, where Wilma left it, but Harry is now carrying it.

As usual in the Wally games, everything is



against you. Inanimate (or usually inanimate) objects, your friends, even the shuttle service across town is not what it used to be.

Everyone's a Wally is produced for the 48K

Spectrum by Mikrogen, 44 The Broadway, Bracknell, Berkshire.

**Price: £6.95**

**Game type: Arcade adventure**

**Rating: 88%**

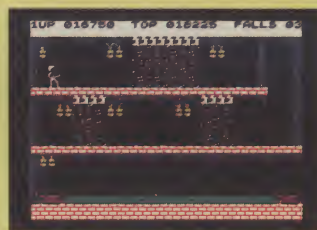
## BRUCE LEE

**F**ACE THE NINJA! Battle against the Green yamo! Avoid exploding t'sung-lin! Who are you? Why, **Bruce Lee**, of course.

The moves that you can make in this game are spectacular. Leap over your opponents' head. Take a running jump and crash both feet into their chin. Deliver a repeated series of punches and watch

them crumple to the floor and vanish.

Your aim is to claim infinite wealth and the secret of immortality from the wizard who dwells within a fortress. On each screen you must hit either all, or a select few of the lanterns you can see, to reveal the exit. Each screen is a little harder than the previous one, and you must be prepared for bushes to explode beneath your feet, particle lifts to carry you into the air, or force



fields to blast you to ashes.

The good news is that these problems are likely to affect your slow moving enemies even more than they do you. The bad news is that, on some of the later screens, this makes next

to no difference.

Bruce Lee is a very polished version of the ladders-and-levels type of game. The movements, although not the sound effects, do manage to capture, to some extent, the excitement of Lee's films. Great.

Bruce Lee is distributed by US Gold, Unit 24, Tipton Trading Est, Tipton, West Mids.

**Price: £7.95**

**Game type: Arcade**

**Rating: 75%**

## SOFT AID

**T**HERE ARE some excellent games available on the **Soft Aid** cassette, and it is worth paying £4.99 for any of



the ten games on offer when you know that your money will go to help Ethiopia.

The ten games included in the spectrum Soft-Aid cassette are: **Spellbound**, **Starbike**, **Kokotini Wilf**, **The Pyramid**, **Horace goes Skiing**, **Gilligan's Gold**, **Ant Attack**, **3D Tank Duel**, **Jack & The Beanstalk** and **Sorcery**.

One or two dud games in that list, but they are more than counterbalanced by the good games. **The Pyramid** from Fantasy, for example, is a first-class arcade game which is no longer on sale.

But it is wrong to single out any of these games out for particular praise. They have all been top games, each one of them successful in their own right. Whether you have seen them before and want to

replay them, or whether you have only just bought a computer and have so far missed these games it is worth buying Soft Aid.

This cassette probably represents the best value in the market at the moment. It deserves to go straight into the charts at number one.

All money raised by Soft Aid will go to the Bob Geldof Band-Aid Ethiopian Appeal Fund.

**Price: £4.99**

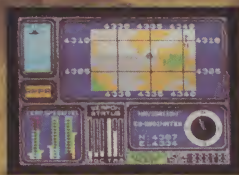


# COMBAT LYNX

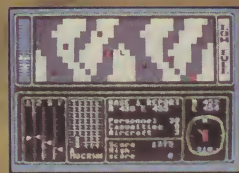
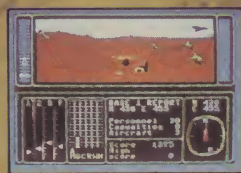
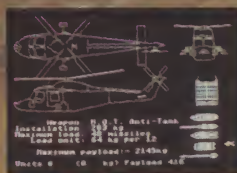
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## SAM STOAT

**G**REMLIN Graphics' games. You either love them or you hate them. Nobody at *Sinclair Programs* loves them, but we may be unusual.

**Sam Stoat Safe Breaker** resembles **Monty is Innocent** in many ways and, if you liked one, you are likely to enjoy the other.

Sam Stoat is trying to break into a series of houses, to rob the owners of all their valuables. To do so, he must find the bomb in each house and take it to the safe, find the match in each house and take it to the safe, break into the safe,

steal the diamond which it contains and then escape.

Each of the screens is littered with the bizarre wandering enemies in which Gremlin specialises. Contact with any of these enemies will sap your energy.

The graphics for each screen are well drawn. In one room Sam must creep past the owner of the house or, at least, past his big toe, which is sticking out of the bath. Movement between series of rooms is done through mouseholes.

As usual, though, it is the flickering graphics



which make this game an eye-straining problem to play. As the enemies move around, the background behind them takes on their colours. With six characters zooming around a room at once, you have to have good eye sight, a well-adjusted TV set,

and a strong stomach to be able to watch the game.

Sam Stoat is produced for the 48K Spectrum by Gremlin Graphics, 10 Carver Street, Sheffield.

Price: £6.95  
Game type: Arcade  
Rating: 35%

## ALIEN 8

**A**LIEN 8 is, in every way, the follow up to **Knight Lore**. If you have played **Knight Lore**, you will know, almost immediately, exactly what is happening in **Alien 8**, and what to do.

The story line is complex, and well-explained. Your main aim is to move your robot around a space ship, col-

lect various objects

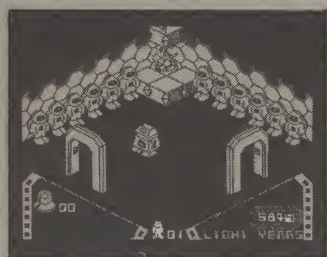
shells. Movement is tricky, for moving three-dimensionally on a two-dimensional screen is a little difficult to grasp. Still, Ultimate make it as easy for you as they can, with a variety of movement options.

If you have never played **Knight Lore**, buy that before you buy **Alien 8**, for it is slightly easier. **Alien 8** requires absolute precision and split second timing. As the clockwork mice chase you, you cannot afford to stop to think half way across a room as the ground gives way underneath your feet.

Although **Alien 8** has obvious similarities with **Knight Lore**, it is a completely different and much more difficult game.

**Alien 8** is produced by Ultimate, The Green, Ashby de la Zouch, Leicestershire.

Price: £9.95  
Game type: Arcade  
adventure  
Rating: 93%



lect various objects which have been stored in a variety of inaccessible places, and carry them to cauldrons which are waiting to receive them.

The graphics are like those in **Knight Lore**, perfectly drawn, fully three-dimensional rooms although, in **Alien 8**, they seem to have been constructed from egg boxes, and broken egg

## DRAGONTORC

**A**T LAST! The sequel to **Avalon**, the adventure movie, is on sale, and it is better, far better than **Avalon**.

**Dragontorc** sets you, as Maroc the wizard, to defeat Morag, the witch queen of the north. You must move your astral projection through a series of three dimensional rooms, find and employ a series of spells, map a route, utilise objects which you find on the way, defeat enemies and make friends.

Make friends? Yes, because each of the characters in the game reacts to you depending on their original characteristics and how you act towards them or others of their race. Skeletons are empty headed, and what brain remains to them tends to be full of death, so it probably saves time to kill them, rather than attempt friendship.

Elves, though, are friendly little chaps, if a trifle shy. If you avoid killing any of them, either on purpose or by mistake, and if you

try out a spot of trading with them, they will become friendly, and willing to help you in any way that they can.

A number of nice touches add to the computer movie effect of **Dragon torc**. The sound effects let you know what is happening, as far as is possible with the Spectrum. You can hear skeletons thudding around the room, or the elves skipping in. There are some surprises waiting for you too. Wait until you try unlocking one of the boxes. Yeeuch. Or, until you search the wrong skeleton. Aaagh.

**Dragontorc** is an excellent game. It makes a good film as well. Catch it on your local Spectrum. Produced by Hewson Consultants 60a St Mary's Street, Wallingford, Oxon.

Price: £7.95  
Game type: Arcade  
adventure  
Rating: 85%

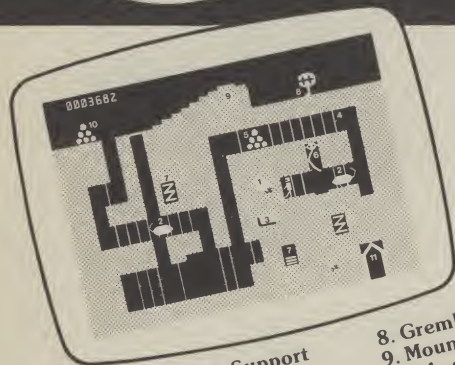




# LOOK!

## NOW THERE ARE HI-RES PROGRAMS FOR THE 16K ZX-81

# 3



1. Nuggets
2. Giant Rats
3. Burrowing Rat
4. Support
5. Cave In
6. Snake
7. Snake Nest
8. Gremlin
9. Mound
10. Pile of Earth
11. Cave

## FORTY NINER

In 1849 the Great American Gold Rush started. Almost everyone who could sold up everything and dashed to the west coast to look for this precious metal – including you!

You must excavate this precious metal – but can you survive the giant rats and that vicious Gremlin which will come to infest your mine? Can you trick the snakes into leaving their comfortable nests and destroy the rats for you? Can you keep the Gremlin at bay?

Riches await you – but so do the hazards!

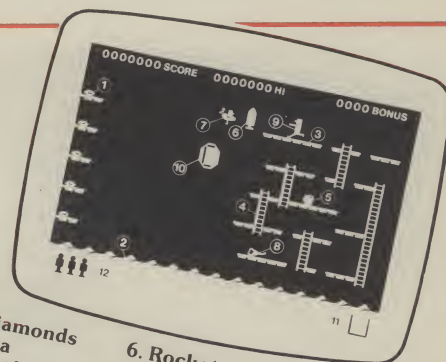
## ROCKET MAN

Get rich quick by collecting Diamonds that are simply lying there waiting for you! Oh... I forgot to mention that there are one or two problems!

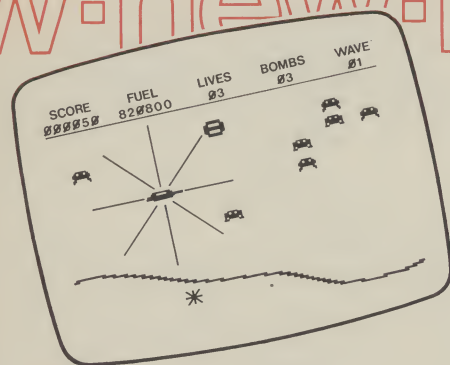
There is an expanse of shark infested water between you and the Diamonds and a strange breed of Bubble that seems hell bent on getting you in it! Somehow you must cross it...

You have a Rocket Pack to help you (a Vulture on higher levels) but you must rush around the platforms and ladders collecting cans of fuel (legs of lamb with the Vulture) and cursing that weird Bubble. Once you have enough fuel then it's Chocks Away!

Oh... but don't run out of fuel on the way – otherwise it's... SPLASH!



1. Diamonds
2. Sea
3. Platforms
4. Ladders
5. Fuel Cans
6. Rocket
7. Vulture
8. Leg of Lamb
9. Player
10. Bubloid
11. Fuel Gauge
12. Men remaining



## Z-XTRICATOR

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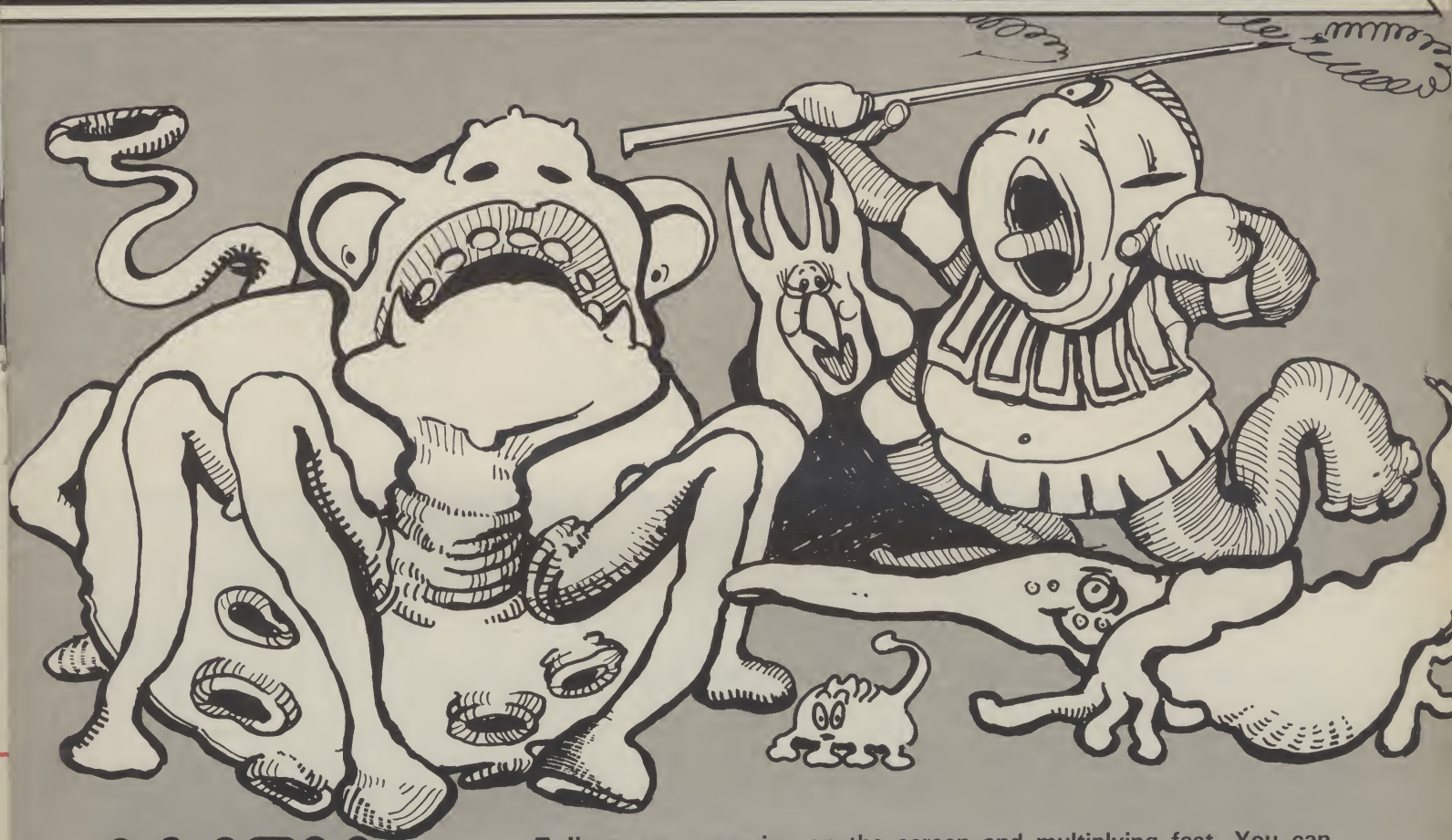
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# ALIEN 10

**A**liens are appearing on the screen and multiplying fast. You can defend yourself by pressing O=left, P=right and Q=fire. Beware, if 10 aliens are on the screen at the same time you will be eliminated. Alien 10 has five levels of difficulty and has been written for the Spectrum by Adam Parker, Wolverhampton.

All underlined characters are to be entered in graphics mode.

u

```

6 PRINT AT 12,12; FLASH 1;"A
LEIN 10"
7 PAUSE 0
10 GO SUB 1000
20 GO SUB 1200
30 REM screen setup
35 BORDER 0
40 CLS : PRINT AT 20,2; PAPER
4;"
"
45 PRINT AT 21,2; PAPER 4;"
"
50 FOR s=1 TO 20
60 PLOT RND *254, RND *120+40

70 NEXT s
80 LET fi=0: LET l=15
90 LET z=0: LET hits=0
100 REM aliens
110 POKE 23672,0
120 LET t= PEEK 23672
130 IF t >= 80-(a*6) THEN PRIN
T AT RND *17, RND *28+2; INK 2
;"A": LET z=z+1
140 IF z=10 THEN GO TO 400
150 PRINT AT 21,21;z
160 IF t >= 80-(a*6) THEN POKE
23672,0
200 REM lazer base
205 LET l=1+( INKEY$ ="p")-( IN
KEY$ ="o")
210 LET l=1+(l=0)-(l=30)
220 PRINT AT 19,1;" L ": PAUSE
4
230 IF INKEY$ ="q" THEN GO TO
250
240 IF INKEY$ <> "q" THEN GO
TO 120
250 FOR c=18 TO 0 STEP -1
260 PRINT AT c,1+1;"D": PAUSE
2
270 PRINT AT c,1+1;" "
```

```

275 IF ATTR (c-1,1+1)=58 THEN
GO TO 300
280 NEXT c
290 GO TO 130
300 REM missile hit
310 BEEP .1,z*2
320 LET z=z-1: PRINT AT 21,21;
z
330 PRINT AT c-1,1+1; FLASH 1;
"E": PAUSE 50
340 PRINT AT c-1,1+1;" "
350 LET hits=hits+1
360 PRINT AT 21,3;"HITS=";hits

370 GO TO 130
400 PRINT AT 4,8; INK 0; FLASH
1;"YOU'VE BEEN ELIMINATED"
405 FOR i=30 TO -30 STEP -1: BE
EP .01,i: NEXT i
410 PRINT AT 12,3;"Do you want
another game y/n"
420 IF INKEY$ ="y" THEN GO TO
20
430 IF INKEY$ ="n" THEN PRINT
"
GOODBYE
"
440 GO TO 420
1000 FOR n=0 TO 7
1010 READ a: POKE USR "a"+n,a

1020 NEXT n
1030 DATA 129,126,219,126,60,60,
90,129
1040 FOR n=0 TO 7
1050 READ l: POKE USR "l"+n,l

1060 NEXT n
1070 DATA 24,24,24,24,60,126,255
,90
1080 FOR n=0 TO 7
1090 READ d: POKE USR "d"+n,d

1100 NEXT n
```

```

1110 DATA 16,16,16,16,16,16,58,4
0
1120 FOR n=0 TO 7
1130 READ e: POKE USR "e"+n,e

1140 NEXT n
1150 DATA 137,74,52,204,51,44,82
,145
1160 RETURN
1200 REM instructions
1210 PRINT AT 3,3;"YOU HAVE TO
DEFEND YOURSELF AGAINST THE A
TTACKING ALEINS THEY WILL RE-
ENERGISE OUT OF HYPERSPASE A
BOVE THE GROUND IT'S YOUR JO
B TO BLAST THE ALEINS OUT O
F THE UNIVERSE USING YOU LAS
ER BASE GOOD LUCK!"

1220 PRINT AT 16,3;"PRESS ANY K
EY TO CONTINUE"
1230 IF INKEY$ =" " THEN GO TO
1250
1240 PAUSE 0
1250 CLS : PRINT AT 3,1;"YOU MO
VE YOU BASE WITH THE KEYS
O = LEFT
P = RIGHT
Q = FIRE

OU ALLOW 10 ALEINS TO BE IF Y
ENT ON THE SCREEN AT PRES
YOU WILL BE ELIMINATED" ONCE
1260 PRINT AT 13,2;"SELECT SKIL
L LEVEL FROM 1 TO 5"
1270 PRINT AT 15,2;"1=EASY 5=I
MPOSSABLE!!"
1280 LET a$= INKEY$
1290 INPUT "SKILL LEVEL= ";a$
1300 IF a$<"1" OR a$>"5" THEN
GO TO 1280
1310 LET a= VAL a$
1320 RETURN
```



```

10 REM COMPUTER BATTLESHIPS by
  A. Pratt
50 REM Initialise variables
60 LET a=0: LET b=1: LET d=2:
LET e=7: RANDOMIZE
70 BORDER e: PAPER e: INK a: B
RIGHT a: CLS
80 DIM b$(20): DIM w$(b): DIM
n$(6): DIM i$(17): DIM j$(32)
90 DIM h(3): DIM g(3): DIM y(8
): DIM x(8)
100 LET n$="BDDFFF"
110 LET b$="0123456789ABCDEFGHI
J"
120 FOR i=b TO 3: READ h(i): LE
T g(i)=h(i): NEXT i
130 DATA 4,6,6
140 FOR i=b TO 8: READ y(i): RE
AD x(i): NEXT i
150 DATA -b,a,-b,b,a,b,b,b,a,
b,-b,a,-b,-b,-b
160 REM **** Instructions ****
180 PRINT BRIGHT b; AT a,a;"

```

```

COMPUTER BATTLESHIPS
190 PRINT "Battleships is play
ed on a board of 10 by 10 squares
on which are sited 1 Battleship,
2 Destroyers and 3 Frigates."
200 PRINT "Each ship is repres
ented by a horizontal or verti
cal line of 4*B, 3*D or 2*F. No
two ships are allowed to touc
h each other in any direction."
210 PRINT "The object is to lo
cate and sink the computers ships
before it sinks yours. A scor
e of 16 wins."
220 PRINT "Locations are refe
red to by co-ordinates and are
chosen by pressing the lette
r followed by the number."
230 PRINT BRIGHT b;" Press a
ny key to continue "
240 PAUSE a
250 REM Start of screen setup

```

```

260 FOR i=b TO 21: PRINT AT i,
a;j$: NEXT i
270 PLOT d,34: DRAW a,131: DRAW
251,a: DRAW a,-131: DRAW -251,a
280 FOR i=5 TO 133 STEP 128
290 PLOT i,37: DRAW a,125: DRAW
117,a: DRAW a,-125: DRAW -117,a
300 NEXT i
310 PRINT AT d,b;"HUMAN SCORE:
"; AT d,17;"COMPS SCORE:"
320 PRINT AT 4,3;"ABCDEFGHIJ";
AT 4,19;"ABCDEFGHIJ"
330 FOR i=a TO 9
340 PRINT AT 6+i,b;i; AT 6+i,1
7;i: NEXT i
400 REM ** Sets up the boards *
410 PAPER 4: INK 4: FOR i=d TO
18 STEP 16: PRINT AT 5,i;"XXXXX
XXXXXX"; AT 16,i;"XXXXXXXXXXXXX"
420 NEXT i

```

# BATTLESHIP

**P**it your wits against the computer in Battleship written by A. Pratt from Chelmsford for the Spectrum.

Two boards are displayed on screen. Each contains a set of 10 by 10 square boxes each with a unique combination of numbers and letters. Play commences when you position your ships on your board and continues when you select the co-ordinates you think will uncover the computer's ships.

Neither you nor the computer can see the other's fleet, but you must locate and destroy its ships before it gets yours. The first to score 16 points wins.

All underlined characters are to be entered in graphics mode.





```

430 FOR i=6 TO 15
440 PRINT AT i,d;"X"; AT i,13;
"X"; AT i,18;"X"; AT i,29;"X"
450 FOR j=3 TO 12: LET k=(i+j)/
d
460 PRINT PAPER e; BRIGHT ((k-
INT (k))*d); AT i,j;" "; AT i,j
+16;" ": NEXT j
470 NEXT i: PAPER e: INK a
600 REM *** Enter the ships ***

```

```

620 BRIGHT b
630 GO SUB 4000: GO SUB 5000
640 LET dir=a: LET max=a: LET r
last=a: LET clast=a: LET h=a: LE
T g=a: GO SUB 990
650 IF RND <.5 THEN GO TO 830

```

```
800 REM *** Main game loop ***
```

```
810 GO SUB 1000: REM Human move
```

```
820 IF h=16 THEN GO SUB 8000:
```

```

PRINT AT 19,a;"Human won ";h;"
to ";g: STOP
830 GO SUB 2000: REM Comps move

840 IF g=16 THEN GO SUB 8000:
PRINT AT 19,a;"Computer won ";g
;" to ";h: STOP
850 GO TO 810
980 REM **** Score update ****

```

```

990 PRINT AT d,13;h; AT d,29;g
: RETURN
1000 REM **** Humans move ****

```

```

1010 LET j=6-b*(g(b)<3)-b*(g(d)<
5)-b*(g(d)<3)-b*(g(3)<5)-b*(g(3)
<4)

```

```

1020 IF j<d THEN LET j=d
1030 GO SUB 8000: LET pos=b
1050 PRINT AT 18,a;"HUMAN has "
;j;" moves. Enter co-ords"
1060 FOR k=b TO j: LET r=a: LET
c=a: LET pos=pos+4
1090 PRINT AT 21,b;"Move Number
";k; FLASH b; AT 21,16;"?";: PR
INT " ";
1100 GO SUB 7000: LET c=c+16
1160 PRINT AT 19,pos;b$(c-8);b$
(r-5); AT 21,a;j$
1170 IF ATTR (r,c)=87 THEN PRI
NT INK d; AT 20,pos;"Mad": GO T
O 1290

```

```

1180 LET w$= SCREEN$ (r,c)
1200 IF w$=" " THEN GO SUB 6500
: GO TO 1270
1210 IF w$="B" THEN LET g(b)=g(
b)-b
1220 IF w$="D" THEN LET g(d)=g(
d)-b
1230 IF w$="F" THEN LET g(3)=g(
3)-b
1240 PRINT PAPER d; INK e; FLAS
H b; AT r,c;w$: PRINT AT 20,pos
;"*";w$;"*"
1250 GO SUB 6000

```

```

1260 LET h=h+b: GO SUB 990
1270 PRINT PAPER d; INK e; BRIG
HT b; AT r,c;w$:
1280 IF h=16 THEN RETURN
1290 NEXT k
1300 RETURN
1999 REM
2000 REM *** Computer's move ***

```

```

2010 LET j=6-b*(h(b)<3)-b*(h(d)<
5)-b*(h(d)<3)-b*(h(3)<5)-b*(h(3)
<4)

```

```

2020 IF j<d THEN LET j=d
2030 GO SUB 8000: LET pos=b
2040 PRINT AT 18,a;"COMPUTER ha
s ";j;" moves."
2050 LET r=rlast: LET c=clast
2060 FOR k=b TO j: LET pos=pos+4

```

```

2070 IF dir>a AND max>a THEN GO
TO 2500
2100 REM **** Random choice ****

```

```

2110 LET r= INT ( RND *10)+6: LE
T c= INT ( RND *10)+3
2120 IF ATTR (r,c)=87 OR ATTR
(r,c)=82 THEN GO TO 2110
2150 REM Isolated square check

```

```

2160 LET v=a: FOR i=b TO 7 STEP
d
2170 LET attr= ATTR (r+y(i),c+x(
i))

```

```

2180 IF attr=87 OR attr=82 OR at
tr=36 THEN LET v=v+.25

```

```

2190 NEXT i: IF v=b THEN GO TO
2110

```

```
2200 REM ** Ship close check **
```

```

2210 LET v=a: FOR i=b TO 8
2220 IF ATTR (r+y(i),c+x(i))=87
THEN LET v=b

```

```

2230 NEXT i: IF v=b THEN GO TO
2110

```

```

2300 GO SUB 3000: LET w$= SCREEN
$ (r,c)

```

```

2310 IF w$=" " THEN GO SUB 6500
: PRINT PAPER d; INK d; BRIGHT
b; AT r,c;"X": GO TO 2410

```

```

2320 IF w$="B" THEN LET h(b)=h(
b)-b: LET max=3

```

```

2330 IF w$="D" THEN LET h(d)=h(
d)-b: LET max=d

```

```

2340 IF w$="F" THEN LET h(3)=h(
3)-b: LET max=b

```

```

2350 PRINT PAPER d; INK e; FLAS
H b; AT r,c;w$: PRINT AT 20,pos
;"*";w$;"*"

```

```
2360 GO SUB 6000
```

```
2370 LET g=g+b: GO SUB 990
```

```
2380 LET dir=b+d*( RND <.5)
```

```

2390 PRINT PAPER d; INK e; BRIG
HT b; AT r,c;"*"

```

```
2400 IF g=16 THEN RETURN
```

```
2410 NEXT k
```

```
2420 LET rlast=r: LET clast=c
```

```
2430 PAUSE e*6
```

```
2490 RETURN
```

```
2500 REM *** Search routine ***
```

```

2600 LET rt=r+y(dir): LET ct=c+x
(dir)

```

```

2610 IF ATTR (rt,ct)=87 THEN L
ET r=rt: LET c=ct: GO TO 2600

```

```

2620 IF SCREEN$ (rt,ct)=" " THE
N LET r1=rt: LET c1=ct: LET dir
=dir+4-6*(dir=5)-10*(dir=7): GO
TO 2800

```

```

2630 IF ATTR (rt,ct)=82 OR ATT
R (rt,ct)=36 THEN LET dir=dir+4
-6*(dir=5)-10*(dir=7): GO TO 260
0

```

```

2640 IF SCREEN$ (rt,ct) <> " "
THEN LET r1=rt: LET r=rt: LET c
1=ct: LET c=ct: GO TO 2800

```

```
2800 REM *** Successive hits ***
```

```

2810 GO SUB 3000: LET w$= SCREEN
$ (r1,c1)

```

```

2820 IF w$=" " THEN GO SUB 6500
: PRINT PAPER d; INK d; BRIGHT
b; AT r1,c1;"X": GO TO 2400

```

```

2830 IF w$="B" THEN LET h(b)=h(
b)-b

```

```

2840 IF w$="D" THEN LET h(d)=h(
d)-b

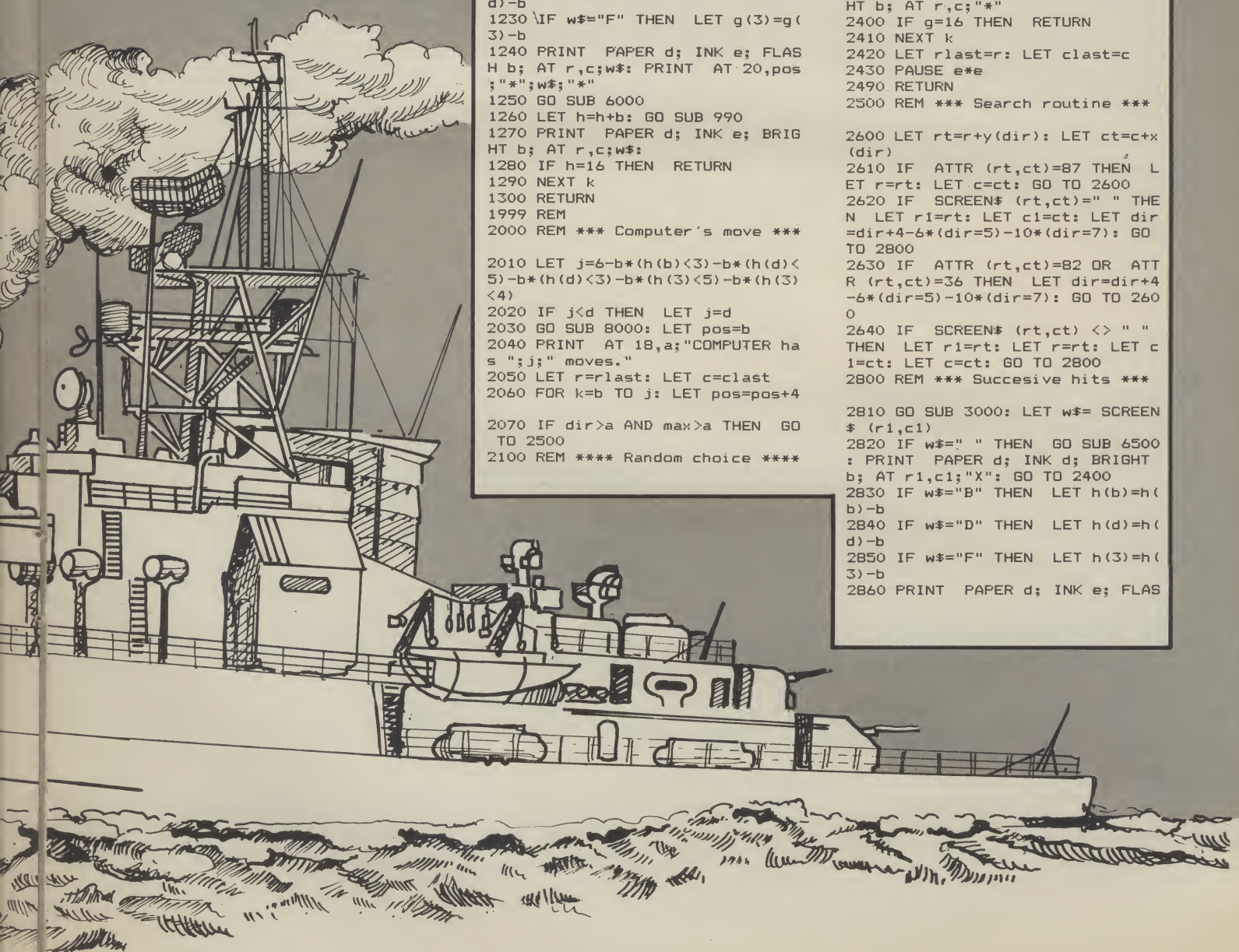
```

```

2850 IF w$="F" THEN LET h(3)=h(
3)-b

```

```
2860 PRINT PAPER d; INK e; FLAS
```





```

H b; AT r1,c1;w$: PRINT AT 20,p
os;"*";w$;"*"
2870 GO SUB 6000
2880 LET g=g+b: LET max=max-b: G
O SUB 990
2890 IF max=a THEN LET dir=a
2900 PRINT PAPER d; INK e; BRIG
HT b; AT r1,c1;"*"
2920 GO TO 2400
3000 PRINT AT 19,pos;b$(c+8);b$
(r-5): PAUSE 30: RETURN
4000 REM **** Human's Ships ****

4010 GO SUB 8000: LET pos=8: LET
Bad=4700
4020 PRINT AT 18,a;"HUMAN SHIPS
: Enter start co-ords A-J , 0-9
, R - Right or U - Up"
4025 PRINT AT 20,9; PAPER 5;"
"
4030 FOR n=b TO 6
4035 PRINT AT 21,a;j$: PAUSE e*
e
4040 LET r=a: LET c=a: LET z=a:
LET x=5
4050 IF n=b THEN PRINT AT 21,a
;"Battleship (4 squares) ";
4060 IF n=d OR n=3 THEN PRINT
AT 21,a;"Destroyer "+ STR$ (n-b)
+" (3 squares) ";
4070 IF n>3 THEN PRINT AT 21,a
;"Frigate "+ STR$ (n-3)+" (2 squ
ares) ";
4080 PRINT AT 21,26; FLASH b;"?
";: PRINT " ";
4100 GO SUB 7000
4160 IF INKEY$="r" OR INKEY$
="R" THEN LET z=b: PRINT "R": G
O TO 4190
4170 IF INKEY$="u" OR INKEY$
="U" THEN LET z=d: PRINT "U": G
O TO 4190
4180 GO TO 4160
4190 BEEP .1,e+b: PRINT AT 21,2
6;" "
4200 IF SCREEN$ (r,c) <> " " TH
EN LET i$="Occupied square": GO
TO Bad
4210 LET m=3-b*(n>b)-b*(n>3)
4230 REM ** Try to place ship **

4240 FOR x=a TO m
4250 IF z=b THEN LET c1=c+x: LE
T r1=r
4260 IF z=d THEN LET c1=c: LET
r1=r-x
4270 IF SCREEN$ (r1,c1)="X" THE
N LET i$="Off the board": GO TO
Bad
4280 IF SCREEN$ (r1,c1) <> " "

```

```

THEN LET i$="Overlaps another":
GO TO Bad
4290 REM ** Check neighbours **

4300 LET v=a: FOR j=-b TO b: FOR
k=-b TO b
4310 IF SCREEN$ (r1+j,c1+k) <>
" " THEN IF SCREEN$ (r1+j,c1+k
) <> "X" THEN LET v=b
4320 NEXT k: NEXT j
4330 IF v=b THEN LET i$="Too cl
ose": GO TO Bad
4340 NEXT x
4350 REM **** Place ship ****
4360 FOR x=a TO m
4370 IF z=b THEN LET c1=c+x: LE
T r1=r
4380 IF z=d THEN LET c1=c: LET
r1=r-x
4390 PRINT AT r1,c1; INK b;n$(n
)
4400 NEXT x
4410 LET pos=pos+d
4420 PRINT AT 20,pos; PAPER 5;
INK b;n$(n)
4430 NEXT n
4440 FOR x=1 TO 100: NEXT x: RET
URN
4700 REM Invalid routine
4710 PRINT AT 21,a; INK e; PAPE
R d;i$;" Try again ": FOR f=
1 TO 3: BEEP .05,3: BEEP .05,12:
BEEP .05,3: BEEP .05,12: NEXT f

4720 FOR f=b TO 100: NEXT f: PRI
NT AT 21,a;j$
4730 GO TO 4040
5000 REM ** Computer's Ships **

5010 GO SUB 8000: LET pos=8
5020 PRINT AT 18,a;"COMPUTER SH
IPS now positioned :"
5100 FOR n=b TO 6
5110 LET m=3-b*(n>b)-b*(n>3)
5120 LET r= INT ( RND *(11-m))+6
: LET c= INT ( RND *(11-m))+19

5130 GO TO 5200+100*( RND <.5)

5150 LET pos=pos+d: BEEP .2,12

5160 PRINT AT 20,pos; INK d; FL
ASH b;n$(n)
5170 NEXT n
5180 PAUSE 20: FOR x=b TO 4: BEE
P .05,15: BEEP .07,12: NEXT x: P
RINT AT 21,14; INK 4; FLASH b;"
Done"
5190 PAUSE 200: RETURN
5200 REM *** Ship horizontal ***

```

```

5210 LET r1=r: FOR x=a TO m: LET
c1=c+x
5220 IF SCREEN$ (r1,c1) <> " "
THEN GO TO 5110
5230 GO SUB 5400: IF v THEN GO
TO 5110
5240 NEXT x
5250 FOR x=a TO m: LET k=(r+c+x)
/2
5260 PRINT AT r,c+x; INK e; BRI
GHT ((k- INT k)*d);n$(n)
5270 NEXT x
5290 GO TO 5150
5300 REM *** Ship vertical ***

5310 LET c1=c: FOR x=a TO m: LET
r1=r+x
5320 IF SCREEN$ (r+x,c) <> " "
THEN GO TO 5110
5330 GO SUB 5400: IF v THEN GO
TO 5110
5340 NEXT x
5350 FOR x=a TO m: LET k=(r+c+x)
/2
5360 PRINT AT r+x,c; INK e; BRI
GHT ((k- INT k)*d);n$(n)
5370 NEXT x
5390 GO TO 5150
5400 REM Check comp's neighbours

5410 LET v=a: FOR j=-b TO b: FOR
k=-b TO b
5420 IF SCREEN$ (r1+j,c1+k) <>
" " THEN IF SCREEN$ (r1+j,c1+k
) <> "X" THEN LET v=b
5430 NEXT k: NEXT j: RETURN
6000 REM Hit ship - sound effect

6010 FOR i=e TO a STEP -.1: BEEP
.005,i: NEXT i: RETURN
6500 REM Miss - sound effect
6510 FOR i=a TO e*: NEXT i: BEE
P .3,3: RETURN
7000 REM *** Input co-ords ***

7010 LET c= CODE INKEY$ -62: IF
c>34 THEN LET c=c-32
7020 IF c<3 OR c>12 THEN GO TO
7010
7030 PRINT CHR$ (c+62);: BEEP .
1,e-b
7040 LET r= CODE INKEY$ -42: IF
r<6 OR r>15 THEN GO TO 7040
7050 PRINT CHR$ (r+42);: BEEP .
1,e
7060 RETURN
8000 REM * Clear bottom lines *

8010 PRINT AT 18,a;j$;j$;j$;j$:
RETURN
9999 SAVE "BTSHPS": STOP

```





```

5 GO SUB 9000
10 CLS
20 PRINT AT 10,8;"A A A A A A"
A A"
25 INK 0
30 PRINT AT 11,7;"(17*ig8)"
40 PRINT AT 12,7;"(17*ig8)"
50 PRINT AT 13,7;"(17*ig8)"
55 INK 7
60 PRINT AT 14,8;"B B B B B B"
B B"
70 FOR a=0 TO 9: FOR b=8 TO 22
STEP 2
80 PRINT AT a,b;"C"
90 NEXT b
100 NEXT a
105 LET score=0: LET energy=3
110 FOR a=15 TO 21: FOR b=8 TO
22 STEP 2
120 PRINT AT a,b;"C"
130 NEXT b: NEXT a
140 LET a=9: LET b=16
150 LET x=0: LET y= INT ( RND
*8)+1
155 PRINT AT 21,1: PAPER 2: IN
K 7;"SCORE=": PRINT AT 21,22: I
NK 7: PAPER 2;"ENERGY=":energy
160 PRINT AT a,b: INK 6: BRIGH
T 1;"E"
165 IF y=1 THEN LET y=8

```

```

166 IF y=2 THEN LET y=10
167 IF y=3 THEN LET y=12
168 IF y=4 THEN LET y=14
169 IF y=5 THEN LET y=16
170 IF y=6 THEN LET y=18
171 IF y=7 THEN LET y=20
172 IF y=8 THEN LET y=22
179 PRINT AT x,y: INK 2: PAPER
7: FLASH 1;"D"
180 PRINT AT x-1,y;"C"
190 LET x=x+1
200 IF x=10 THEN GO SUB 1000
210 IF INKEY$="1" OR INKEY$
="2" OR INKEY$="0" THEN GO SU
B 2000
220 GO TO 160
1000 BEEP .1,-20: LET energy=ene
rgy-1
1010 IF energy=0 THEN GO TO 800
0
1020 PRINT AT x-1,y;"C"
1030 GO TO 150
2000 IF INKEY$="1" AND b>8 THE
N LET b=b-2: PRINT AT a,b+2;"C
"
2010 IF INKEY$="2" AND b<22 TH
EN LET b=b+2: PRINT AT a,b-2;"
C"
2020 IF INKEY$="0" THEN GO SU
B 3000
2030 RETURN
3000 BEEP .01,50: IF b=y THEN B
EEP .01,5: PRINT AT x-1,y: INK

```

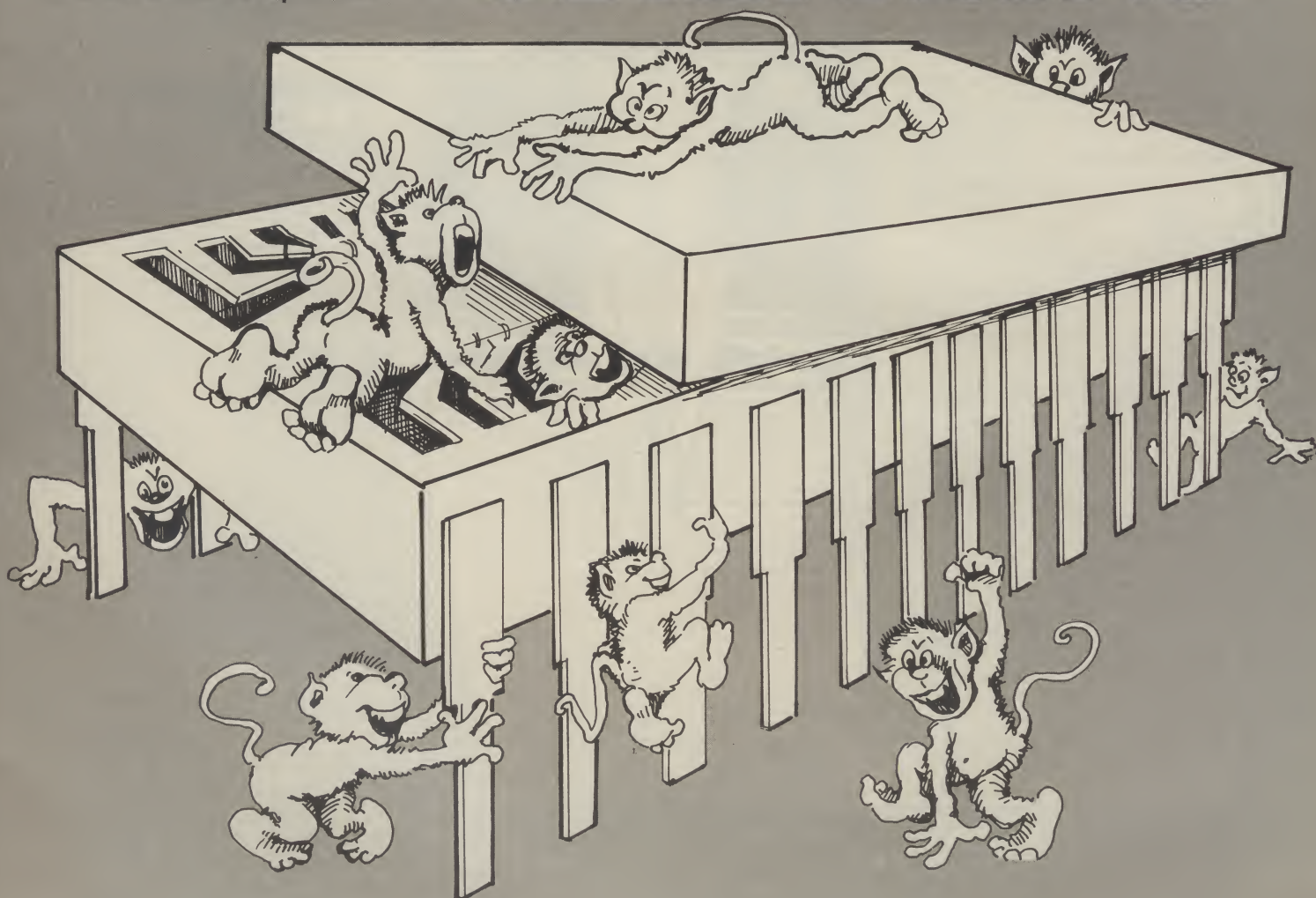
```

7;"C": LET score=score+10: LET x
=0: LET y= INT ( RND *5)+1
3005 PRINT AT 21,7: PAPER 2: IN
K 7:score
3010 RETURN
8000 CLS : PRINT AT 1,10: FLASH
1;"You scored ":score
8030 FOR a=0 TO 20: BEEP .01, RN
D *20: NEXT a: PRINT AT 10,2:
FLASH 1;"Press any key to start
again"
8040 PAUSE 0
8050 RUN 6
9000 FOR a= USR "a" TO USR "e"
+7
9010 READ b: POKE a,b
9020 NEXT a
9025 BORDER 4: PAPER 1: INK 7: C
LS
9030 DATA 24,24,24,24,255,129,12
9,129,129,129,129,255,24,24,24,2
4
9040 DATA 24,24,24,24,24,24,24,2
4,90,153,90,153,90,153,90,153
9050 DATA 90,90,219,219,219,219,
126,60
9055 PRINT AT 2,11: FLASH 1;"CH
IP RAID"
9056 PRINT AT 5,9: PAPER 7: INK
2;"By S.WHITE 1985"
9060 PRINT AT 10,5:"Press any k
ey to start"
9070 PAUSE 0
9080 RETURN

```

**G**remlins are trying to get into your microchip and you must stop them. 0=fire, 1=left and 2=right. Underlined characters are to be entered in graphics mode. Chip Raid, by S White, Hampshire, was written for the Spectrum.

# GREMLINS





# PLANET DESTROYER

```

4 GOSUB 9900
5 LET S=0
6 LET LI=3
7 LET W=0
8 LET T=0
9 LET X=15
10 GOTO 1000
110 NEXT A
115 PRINT AT 8,0;
116 PRINT AT 11,0;
117 FOR A=12 TO 17
118 PRINT AT A,0;
119 PRINT AT A,31;
120 NEXT A
121 GOSUB 1200
122 PRINT AT 19,0;
123 IF W=1 THEN PRINT AT 20,0;
123 PRINT AT 21,0;
125 FOR A=0 TO 5
130 PRINT AT A,X-1;
135 PRINT AT A,X-1;
140 NEXT A
145 LET Y=INT (RND*10)+11
150 IF Y=X THEN GOTO 150
155 LET P=0
160 LET P=5
165 LET X=X
170 PRINT AT 10,0;
175 "LIVES=";LI
180 FOR A=0 TO 2
185 GOSUB 1000+(A*100)
190 PRINT AT 20,31-(T/2);
195 Y-1;
200 IF X<9 OR X>22 THEN GOTO 20
205 IF X=Y THEN GOTO 1900
210 IF INKEY$="0" THEN LET Q=1
215 IF Q=0 THEN GOSUB 1500
220 LET B=INT (RND*2)
225 LET Y=Y+(B=0 AND Y<25)-(B=1 AND Y>6)
230 LET X=X+(INKEY$="2")-(INKEY$="1")
235 NEXT A
240 LET T=T+2
245 IF T<64 THEN GOTO 200
250 IF U=0 THEN LET A$="YOU HA
VE PASSED THROUGH THE
LINE OF THE FEDERATIONS
DEFENSE. YOU MUST NOW USE ONLY
YOUR FINEST COMPUTER, KEEP THE
MIDDLE OF YOUR
255 IF W=1 THEN LET A$="HAVING
SUCCESSFULLY FLOWN DOWN
THE CHANNEL YOU MUST
BE FINAL RUN DOWN TO THE
BLE DUCT, WHEN IT IS
LY BENEATH YOUR SHIP
DESTROY IT.....

```



```

455 FOR A=1 TO 192
456 PRINT A$(A);
457 NEXT A
460 PAUSE 4E4
465 IF W=1 THEN GOTO 5000
470 GOTO 3000
490 STOP
1000 PRINT AT 3,0;
1010 RETURN
1100 PRINT AT 3,0;
1110 RETURN
1200 PRINT AT 3,0;
1210 RETURN
1300 IF Q=2 THEN GOTO 1510
1305 LET X=X
1310 PRINT AT P,X;
1315 LET X=X+1+(2 AND INKEY$="2")
1320 AND INKEY$="1")
1325 LET P=P+1
1330 PRINT AT P,X;
1335 IF P=3 THEN GOTO 1530
1340 RETURN
1345 IF X1=Y THEN GOTO 1800
1350 GOTO 180
1355 FOR A=1 TO 5
1360 PRINT AT 3,Y-1;
1365 "AT 3,Y-1;
1370 NEXT A
1375 LET S=S+100
1380 GOTO 150
1385 FOR A=4 TO 5
1390 PRINT AT A,Y;
1395 "AT A,Y;
1400 NEXT A
1405 FOR A=1 TO 10
1410 PRINT AT 6,X-1;
1415 "AT 7,X-1;
1420 "AT 5,X-1;
1425 NEXT A
1430 LET LI=LI-1
1435 IF LI=0 THEN GOTO 50
1440 PRINT AT 0,10;"GAME OVER"
1445 PRINT AT 10,0;"SCORE=";S
1450 STOP
1500 CLS
1505 PRINT AT 10,0;"SCORE=";S;AT
10,25;"LIVES=";LI
1510 LET W=1
1515 GOSUB 1200
1520 FOR A=0 TO 2
1525 PRINT AT A,0;
1530 NEXT A
1535 PRINT AT 8,0;
1540 LET Y=15

```

In the role of Galactic Space Highway Construction Engineer (Demolition Specialist) it is your aim to blast the hapless planet below you to smithereens in order to make way for a new Space Highway. Luckily for the planet, it has members of the Keep Our Galaxy Intact Federation to defend it. Pilot your ship through three game levels in order to destroy the planet, or be destroyed by the Federation.

Planet Destroyer was written for the 16K ZX-81 by P Sansom of Wisbech, Cambridgeshire.



```

3025 LET X=15
3030 PRINT AT 11,0;"",AT 19,0;"
3032 FOR A=12 TO 18
3035 PRINT AT A,0;"",AT A,31;"
3040 NEXT A
3045 PRINT AT 20,0;"
3090 FOR F=1 TO 64
3095 PRINT AT 15,X;"X";AT 20,31-
(F/2);""
3100 PRINT AT 14,Y-3;"",AT 13,Y-4;"
T 16,Y-3;"",AT 12,Y-5;"
",AT 17,Y-4;"",AT 18,Y-5
3105 IF X<Y-2 OR X>Y+2 THEN GOTO
3500
3110 PRINT AT 15,X;" "
3115 IF X=Y THEN LET S=S+10
3120 LET X=X+(INKEY$="2")-(INKEY
$="1")
3125 LET B=INT (RND*2)
3130 LET Y=Y+(B=0 AND Y<20)-(B=1
AND Y>10)
3200 NEXT F
3250 GOTO 400
3500 FOR A=1 TO 25
3505 PRINT AT 15,X;"X";AT 15,X;"
X";AT 15,X;" "
3509 NEXT A
3510 LET LI=LI-1
3512 IF LI>0 THEN GOTO 3000
3520 PRINT AT 0,10;"GAME OVER";
AT 2,10;"SCORE = ";S
3525 STOP
5000 LET X=15
5010 LET L=INT (RND*25)+10
5095 FOR B=1 TO L
5096 FOR A=0 TO 2
5098 GOSUB 1000+(A*100)
5100 PRINT AT 4,X-1;"050"
5110 LET X=X+(INKEY$="2")-(INKEY
$="1")
5120 IF X<9 OR X>22 THEN GOTO 20
5200 NEXT A
5205 NEXT B
5210 PRINT AT 7,X-1;"
5215 FOR A=1 TO 5
5218 NEXT A
5220 PRINT AT 7,X-2;"",AT 8

```

```

,X;"
5222 FOR A=1 TO 5
5225 IF INKEY$="9" THEN GOTO 800
0
5228 NEXT A
5230 PRINT AT 7,X-2;"",AT 8
,X;"
7000 CLS
7010 PRINT AT 10,1;"YOU HAVE MIS
SED.YOU REAPPROACH"
7020 PAUSE 4E4
7030 CLS
7040 GOTO 10
8000 FOR A=5 TO 8
8005 PRINT AT A,X;"",AT A,X;"
8006 FOR B=1 TO 2
8007 NEXT B
8010 NEXT A
8012 NEXT A
8015 FOR A=1 TO 50
8020 FAST
8030 SLOW
8040 NEXT A
8050 CLS
8060 LET S=S+1000
9000 PRINT AT 10,10;"SCORE = ";S
9010 PRINT AT 20,1;"YOU NOW ATTA
CK ANOTHER PLANET"
9020 PAUSE 4E4
9025 CLS
9030 GOTO 10
9900 PRINT "PLANET DESTROYER
OVER"
9905 PRINT AT 3,0;"YOU MUST PILO
T YOUR SHIP (050) THROUGH THREE
LEVELS TO ULTIMATELY BO
MB THE PLANET."
9910 PRINT
9920 PRINT "STEER YOUR SHIP WITH
1 AND 2 AND FIRE WITH 0.ONCE YOU
HAVE FIRED YOU CAN STEER YOUR M
ISSILES BUT MIND YOU DONT CRASH
INTO THE WALLS."
9930 PRINT
9940 PRINT "THE GAGE AT THE BOTTO
M SHOWS THETIME REMAINING ON TH
AT LEVEL."
9950 PRINT AT 20,10;"GOOD LUCK"
9960 PAUSE 4E4
9970 CLS
9980 RETURN
9990 SAVE "DEATHSTAR"
9995 RUN

```



# 3 in a row

```

1 REM #3-IN-A-ROW*
4 DIM A(36)
5 DIM N(36)
10 DIM M(36)
15 DIM T(2)
12 LET G=0
13 LET T=0
14 LET Z=0
15 LET X=0
16 LET U=1
20 IF G<>0 THEN GOTO 30
35 GOSUB 7000
30 GOSUB 5000
35 IF U<>1 THEN GOTO 45
40 GOSUB 5999
45 FOR C=1 TO 36
50 LET A(C)=0
55 NEXT C
60 GOSUB 500
75 REM *FIRST PLAYER SELECTION

```

```

* 80 IF U=1 THEN LET O=INT (RND*
2)+1
81 IF U=1 THEN LET E=0-1
82 IF U=1 THEN LET E=0-1
85 FOR I=1 TO 36
90 IF E=0 THEN PRINT AT 5,1;"
TO PLAY
95 IF E=1 THEN PRINT AT 5,1;"
TO PLAY
99 REM *GAME BEGINS*
100 INPUT P
105 IF P<1 OR P>36 THEN GOTO 10

```

```

110 IF A(P)<>0 THEN GOTO 100
120 IF E=0 THEN LET U$="X"
125 IF E=1 THEN LET U$="O"
130 PRINT AT M(P)-1,N(P);U$
135 PRINT AT M(P)-1,N(P);U$
140 IF E=0 THEN LET A(P)=1
145 IF E=1 THEN LET A(P)=2
150 IF E=0 THEN GOTO 170

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Continued on next page

Written for the 16K ZX-81 by Glenn and Paul Jones of Kingsthorpe, Northampton, Three In a Row is a strategy game for two players. Compete to form as many rows of three counters as possible within the six by six game grid. The game is played over four rounds, and the computer takes 18 seconds to calculate the scoring rows.



Continued from p25

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164 LET E=0
165 GOTO 175
170 LET E=1
175 NEXT I
180 PRINT AT 5,1:"PRESS A KEY"
185 IF INKEY$="" THEN GOTO 185
190 GOSUB 1000
195 IF E=1 THEN GOTO 198
198 GOTO 200
199 LET E=0
200 PRINT AT 5,1:"
201 IF W=1 THEN LET A=0
202 IF W=2 THEN LET A=2
203 IF W=3 THEN LET A=4
204 IF W=4 THEN LET A=6
205 IF W=5 THEN LET A=8
206 IF W=6 THEN LET A=10
207 IF W=7 THEN LET A=12
208 IF W=8 THEN LET A=14
209 IF W=9 THEN LET A=16
210 PRINT AT 15,W+A;X;AT 20,W+A
211 LET T(1)=T(1)+X
212 LET T(2)=T(2)+Z
213 IF W=4 THEN GOSUB 2000
214 LET X=0
215 LET Z=0
216 GOTO 30
217 REM *BOX NUMBERS*
218 AT 5,18:"
219 AT 5,24:"4"
220 AT 5,30:"5"
221 AT 5,36:"6"
222 AT 5,42:"7"
223 AT 5,48:"8"
224 AT 5,54:"9"
225 AT 5,60:"10"
226 AT 5,66:"11"
227 AT 5,72:"12"
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969 AT 9,524:"754"
970 AT 9,530:"755"
971 AT 9,536:"756"
972 AT 9
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1 PRINT "Who yer gonna call..
.....GHOSTBLASTERS!
"....."By Michael Durkin"
2 BEEP .3,4: BEEP .15,2: BEEP
.5,4: PAUSE 50
3 OVER 1
4 BORDER 2: PAPER 0: INK 7: C
LS : BRIGHT 1
8 GO SUB 9000
10 FOR f= USR "a" TO USR "d"+
7: READ a: POKE f,a: NEXT f
20 DATA 3,15,27,49,59,63,63,57
,192,240,216,140,220,252,252,220
,24,12,0,0,0,0,0,204,102,0,0,0
,0,0,0
30 LET sc=100: LET a=15: LET b
=10: LET ti=1000
32 GO SUB 1000
35 LET x= INT ( RND *21): LET
y=30
37 IF sc<0 THEN GO TO 3000
40 PRINT AT b,a: OVER 0: " ":
LET a=a+( INKEY$ =r$)-( INKEY$ =
1$): LET b=b+( INKEY$ =d$)-( INK
EY$ =u$)
42 LET ti=ti-1: IF ti=0 THEN
GO TO 2800
45 IF INKEY$ =1$ THEN LET a=
a-1

```

The attic room is haunted. As chief Ghostblaster, can you train your sights on the ghosts and shoot them down before they escape through the door at the left of the room?

Written for the Spectrum or Spectrum Plus by Michael Durkin of Preston, Lancashire.

```

50 IF b<0 THEN LET b=0
60 IF a>30 THEN LET a=30
70 IF a<0 THEN LET a=0
80 IF b>21 THEN LET b=21
90 PRINT AT x,y: OVER 1: "AB";
AT x+1,y: OVER 1: "CD"
95 BEEP .005,x+y-10
100 PRINT AT b,a: OVER 0: "+"

```

```

110 IF INKEY$ =f$ AND b=x AND
a=y THEN FOR g=7 TO 0 STEP -1:
PRINT OVER 0: AT b,a: INK g: "AB
"; AT b+1,a: INK g: "CD": BEEP .0
5,g+30: NEXT g: LET sc=sc+( INT
( RND *200))+100: LET p=0: CLS :
GO SUB 1000: GO TO 35
120 IF INKEY$ =f$ AND b <> x A
ND a <> y THEN BEEP .01,-5
140 PRINT #0: AT 0,0: FLASH 1: "
GHOSTBLASTERS"
150 PRINT AT x,y: OVER 1: "AB";
AT x+1,y: OVER 1: "CD": LET y=y-
1

```

```

160 IF y=0 THEN CLS : LET sc=s
c-10: GO SUB 1000: GO TO 35
170 PRINT #0: AT 0,15: "CASH:";s
c:#0: AT 1,10: "TIME:";ti
175 LET v= INT ( RND *100): IF
v>50 THEN LET v=0

```

```

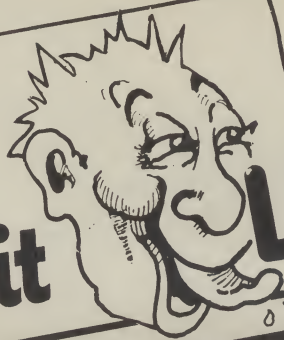
177 IF v<25 AND v>0 THEN LET v
=-1
178 IF v >= 25 AND v <= 50 THEN
LET v=1
180 LET x=x+v: IF x<0 THEN LET
x=0
190 IF x>20 THEN LET x=20
200 GO TO 40
1000 PLOT 0,0: DRAW 50,50: DRAW
155,0: DRAW 0,75: DRAW -155,0: D
RAW 0,-75: PLOT 255,0: DRAW -50,
50: PLOT 255,175: DRAW -50,-50:
PLOT 0,175: DRAW 50,-50
1010 INK 5: PLOT 10,10: DRAW 0,1
24,75: DRAW 4,0: PLOT 150,100:
DRAW 30,0: DRAW 0,-30: DRAW -30,
0: DRAW 0,30: INK 7: RETURN
2800 IF sc >= sk THEN GO TO 700
0
2805 CLS : PRINT FLASH 1: AT 10
,10: "GAME OVER": AT 12,3: "TIME U
P AND YOU DIDNT EARN": AT 14,9: "
ENOUGH CASH": GO TO 9500
3000 CLS : PRINT FLASH 1: AT 10
,10: "GAME OVER": AT 12,6: "YOU'RE
OUT OF CASH!"
3010 GO TO 9500
7000 CLS : PRINT "YOU MADE SUFFI
CIENT CASH. WELL DONE!
YOU WERE ON SKILL LEVEL ";sk/100
0: ". WHY NOT TRY A HARDER LEVEL"
: FOR f=0 TO 50: BEEP .01,f: NEX
T f: GO TO 9510
9000 INPUT "KEYS:LEFT ? ":l$
9010 INPUT "RIGHT ? ":r$
9020 INPUT "UP ? ":u$
9030 INPUT "DOWN ? ":d$
9040 INPUT "FIRE ? ":f$
9045 INPUT "SKILL LEVEL (1-10)":
sk: IF sk<1 OR sk>10 THEN GO TO
9045
9050 LET sk=sk*1000: RETURN
9500 BEEP .5,4: BEEP .3,1: BEEP
.2,5: BEEP .5,4: BEEP .4,1
9510 PRINT #0, AT 1,0: "Another g
ame? eh? (Y/N)": FOR k=0 TO 50:
NEXT k
9520 IF INKEY$ ="y" THEN RUN
9530 IF INKEY$ ="n" THEN GO TO
9550
9540 GO TO 9520
9550 CLS : PRINT "Sure?(Y/N)": B
EEP .5,-20
9560 IF INKEY$ ="y" THEN RANDO
MIZE USR 0
9570 IF INKEY$ ="n" THEN GO TO
9510
9580 GO TO 9560

```

# GHOSTBLASTERS



# You've got it



# Licked

**C**heat at **Cavelon** by starting the game and then pressing down as many keys as you can at the same time. This is best done by placing a book on the keyboard and then pressing down upon it. "HI CHRIS WHAT SHALL I DO" will then be printed on screen. Press a key 1 to 6 to choose the sheet on which you wish to start the next game.

**Paul Howarth,**  
Skelmersdale, Lancs.

**D**isable the **BREAK** key on a mark 3 Spectrum by entering **POKE 23613,82** at the start of a program. To make the computer crash when the **BREAK** key is pressed, enter **23613,0** at the beginning of a program.

**Mrs T Burke,**  
Scrafield, Lincs.

**T**his short Basic program will provide infinite lives on some versions of **Underwulde** from Ultimate. Enter it, and then run the tape.

```
10 LOAD "" SCREEN$
20 LOAD "" CODE
30 POKE 23314,201
40 RANDOMISE USR
23300
50 POKE 59377,0
60 RANDOMISE USR
26610
```

**João Prospero,**  
Lisbon, Portugal.

**G**ain infinite lives in **Sabre Wolf** from Ultimate. Load the first section of the program, press break and stop the tape. Type in: **POKE 23756,1: CLEAR 65535**. Edit the line and move the cursor to the end and delete the following: **PRINT USR 23424**. Add line 10 with either of these two pokes: **POKE 43575,255** for infinite lives with one player, or **POKE 45520,255** for infinite lives with two players. **Gregory Cawthorn,**  
Letchworth, Herts.

**T**o reach the B.P. can in **Pyjamarama**: collect the empty water bucket, take it to the bathroom and pass under the tap. Your bucket will now be full. Take the bucket to the room with the B.P. can, and you will find that it is now safe to pass the snappers. To fill the B.P. can, take it to the fuel dispenser.

**Jason Humphries,**  
Coventry.

**O**btain infinite lives on **Lunar Jetman** from Ultimate by adding this to the loader program:

```
10 CLEAR 24575: PAPER
7: INK 0: BORDER 0: CLS
20 FOR L=1 TO 5: PRINT
AT 6,0: LOAD "" CODE:
NEXT L
30 POKE 23439,201:
POKE 36965,0: RANDO-
MISE USR 32768
```

**Thomas Hindson,**  
Oldham, Manchester.

**Z**X-81 owners will be less familiar with the end-listing procedure which occurs in machine code programs when **NEWLINE** is pressed and the first line overfills the screen. **POKE 16513,118** to prevent this happening.

**Paul Lockett,**  
Northwich, Cheshire.

**T**o escape from the goblins' dungeon in **The Hobbit** from Melbourne House, say to Thorin "open window", and repeat this until he does so. Then say "carry me" and then say "go". He should then carry you out of the dungeon.

To cross the black river say "Throw rope across" and carry on throwing until the rope lands in a boat. Then pull the rope and climb into the boat.

**Christopher Ryan,**  
Euxton, Lancs.





# Pen-friends

**James White**, 27 River Valley Road, Chudleigh Knighton, South Devon would like to find a pen pal outside the Devon area who also owns a Spectrum, and who would be interested in swapping program listings. He would be interested to hear from anyone who has been reading *Sinclair Programs* since before March 1984.

**Computer Pen-Pal Club**, 1 Constellation Street, Adamsdown, Cardiff CF2 1HJ are just starting up. They hope to be able to arrange contacts between computer users, particularly Sinclair users. If you are interested, send a stamped addressed envelope, together with your age, computer, telephone number, and any other relevant details.

**Andrew Hales**, 26 Queens Annes Drive, Westcliff-on-Sea, Essex owns a ZX-81 and would like to find a penfriend in the Essex area. He is interested in swapping ZX-81 games and ideas.

**Jonathan Roberts**, 5 Troed-y-Bwlch, De-ganwy, Gynedd, North Wales would like a penpal from the York area who owns a Spectrum, preferably a 48K Spectrum.

**Martin Garthwaite**, 127 Dringthorpe Road, Dringhouse, York, is eleven years old. He is looking for a penfriend who is interested in Spectrum software such as **Atic Atac** and **Ghostbusters**, and who knows codes for infinite lives in such games. He would also be pleased to swap program listings.



**Savasan Yurtsever**, Mimarlar ap 6/6, A. Eglence, Etlik, Ankara, Turkey has owned a 48K Spectrum for five months and has already written several programs for it. He would like to hear from anyone in search of a penfriend.

**Paul Birch**, Treetops, Whitby, Ellesmere Port, L65 6QT owns a 16K ZX-81. He would like to find a ZX-81 owning pen-pal who lives in the Cheshire area.

**Simon Brodbeck**, Wild Carr Barn, Gressingham, Lancaster, Lancashire feels that the ZX-81 is a very useful machine and that it is treated unfairly both by the general public and by software companies. He would like to hear from other people who think the same way, in order to exchange programs and tips.

**Stuart Bain**, 1 Trenowin Mews, 31 Chancellor Avenue, Durban, South Africa is 14 years old and is looking for a Spectrum owning pen-friend about the same age as himself. He would be willing to swap advice, news, tips and programs. His favourite games are **Sabre Wolf** and **Lords of Midnight**.



# Questline

## Urban Upstart from Richard Shepherd

**Cathy Foot made the grave mistake of leaving sunny Hampstead for the wilds of Scarthorpe. Will she ever escape?**

"HAD bovver wiv dog the other day — lost! Said Yeah man, you get out this hole. So I tell me, split this dump, which bug me more than I thought. Decide I leave this mong the town hall stuff fo who want to split dis Babylon."

Yah, well that's what I found in the archives when I tried to find out how to get out of here — I mean, well, it's just TOO tacky, not a Habitat in sight, and Julian says the wine bars don't bear thinking about — too, too sick-making. We've taken to drinking lager, but this stripey stuff the previous tenant left in the fridge has the oddest effect on one — Oh, Hampstead! Why did I leave you? Oh God — another can of beer — I can't keep this style going much longer!

If I didn't know that I could escape I might never have made the effort. Living here HAS that effect on folks. But I got this letter, see. It was addressed to me, but the person what wrote it forgot we know our mates by their Christian names and signed S. Jay. Good on yer mate, I hope the schools and fings are better out there than they are in Scarthorpe — don't see how they CAN'T be! But next time give me yer full name, so I'll know who you are!

Still, I'm getting out meself and will look you up. The next grubby tramp that knocks at yer door in Glebelands Road, looking for a

handout or a job COULD be yer old mate from Scarthorpe. Fanks, too, to the postie for gettin through. Only one question, postie, old pal, did yer HAVE to use yer submachine gun on my front door? That's part of the reason I'm getting out. I LIKED my old doss, the only thing this one has going for it is a solid front door.

I'm writing this in hospital while I get over my last mixup with the United supporters, then I'm getting out while the going is good. The problem is that the painkillers they are giving me sometimes effects what I write, so please excuse my wandering fingers . . . you CAN make sense of it if you try.

Oops, here comes the nurse again!

Getting out of jail is easy, once you've sussed it. If you xbjum poh fopvhi (move letters back one), the sergeant jt dbmmfe bxbz and you dbo tofbl pvu.

Boy, that stuff they give you is powerful!

There is not much chance to improve reading skills here, apart from gravestones, posters and signs. There is a useful book in the bookshop, though.

Fellow adventurers might remember to dress before leaving their rooms, the police in this town are GOOD, they have to be, but they can be said to be too keen on arrests — perhaps 'cause we don't believe in staying locked up if we can help it. They seem to spend more time on making arrests for indecent exposure, loitering and littering, when, if they was to arrest the football hooligans this might become quite a decent little town. Still, after the last Football Wars, when we were banned by the F.A. from playing against any club outside the town for the next hundred years — I may have

missed a few zeros off that figure, but it don't matter, do it? — the police seem to have lost interest in other thugs and the town has gone right to the dogs.

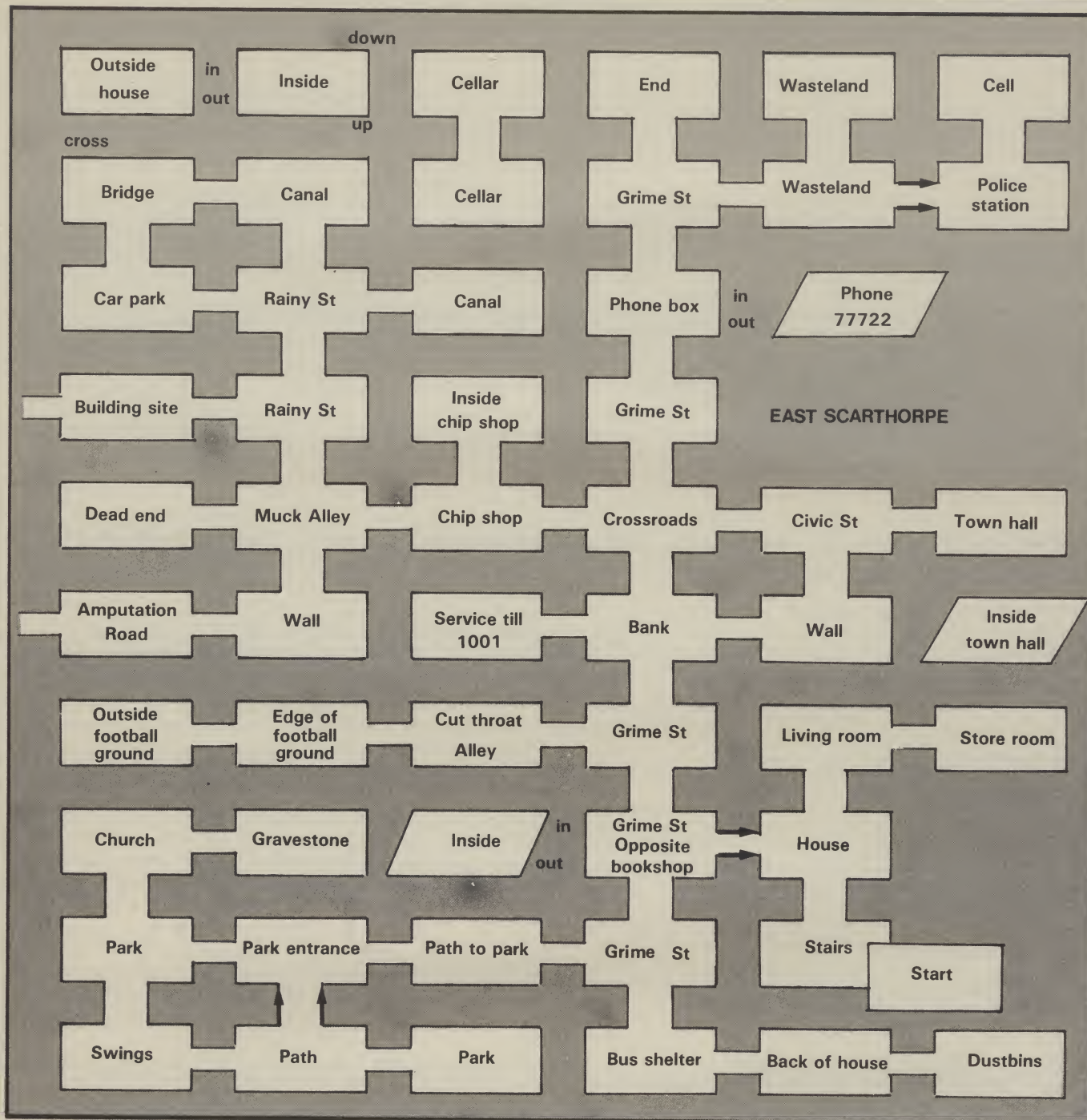
The worst thing about a charge of indecent exposure is that there is NO WAY to rip off a pair of strides if yore in the nick — the old bill are too attached to theirs and they've learnt to keep their spares at home — if cops HAVE homes.

The worst of the hooligans seem to live off Cut Throat Alley — that used to be such a pretty street once, when it was called Coburn Road. NEVER go down there on yer own, the filth use an armoured car if they get called in. The Ambulance guys are pretty good too; they go everywhere — they can afford to, they got their ambulance from the army experimental center and it spozed to be able to take anything up to an atom bomb. Nobody tried that yet, they closed down the college and moved out a lot of stuff when we got banned — some folks declare U.D.I., we got it forced on us; even Maggie gave up when they stopped her from using a nuke.

The only problem with the hospital is that since the oiks started roaming the corridors the staff don't see no point in letting us out. They say that if they do, it only means getting the ambulance out to pick us up again later. I spoze they right. You CAN get out though, there IS a way through that maze of corridors and if you got a doctor coat, they got so many problems with staff they let you go in case you really ARE the new Doctor.

If you REALLY stuck — god, here comes that \*\*\* nurse again, there is one surefire way out of the hospital, you just txfbz. Leave the mbshf l fz in uif jpvtf before





mfwbjoh boe after vokpdljoh uit epps.

The weird thing about Scarthorpe is that only the binmen seem to have credit cards — and those of you who listen to the Chip Shop are going to have a nasty surprise.

They tell me the telephone works, but at best all I seem to get is that \*\*\*\*\* speaking clock — at the third stroke the time will be seven seventy seven and twenty two seconds — precisely?

At the worst, the place is crawling with fuzzmobiles, all looking for yours truly.

Cathy insists I tell you that they've been real clever with

their graphics, and you can get a long way without being able to read a map. And Julian's friend just loved the Fauviste SCREEN\$.

There's one thing bout living in Scarthorpe, once I get out the world's gonna wonder what hit it.

To: Questline, Sinclair Programs,  
Priory Court, 30-32 Farringdon Lane,  
London EC1

From: .....

HELP OFFERED .....

HELP WANTED .....



Missile command was written for the Spectrum or Spectrum Plus by Stephen Page of Ormiston, East Lothian.



## VARIABLES

A variable is a name given to a value which will then tell your Spectrum where that value is stored in memory. A list of the important variables will help you to understand how Missile command works.

graphic a is the front of the alien ship.

a,b are the coordinates of the alien ship.

$x$  is the horizontal position of the missile base.

$g$  is the vertical position of the missile.

## HOW IT WORKS

Line No.

- |       |   |
|-------|---|
| 10    | Selects a random height for the alien.                  |
| 20    | Reads data for graphic and POKES it into memory.        |
| 40-50 | Clears screen and prints ground under the missile base. |

### MAIN CONTROL LOOP:-

- ```

60 Prints the missile base.
    This is made up of three
    of the Spectrum's own
    graphics, using graphic
    6, graphic 3 (with Caps
    shift) and graphic 6 (with
    Caps shift). Note the
    space either side to
    erase the old position.
65 Increments loop counter
    f. To understand what
    this does, see notes for
    line 110.
70 Prints alien ship at a,b
    using graphic 6 and
    graphic a. Again, a
    space is used to the left
    to erase old positions.

```

80-100 Control the base position by scanning the keyboard to check if keys 5 or 8 have been pressed (using INKEY\$) and making sure that it does not go off the screen. A different BEEP for each direction gives a useful

sound effect when moving the base. The STOP key is also scanned to interrupt the game (line 95) and 0 for firing (line 100). If 0 has been pressed then control moves to the FIRE subroutine.

[illegible]

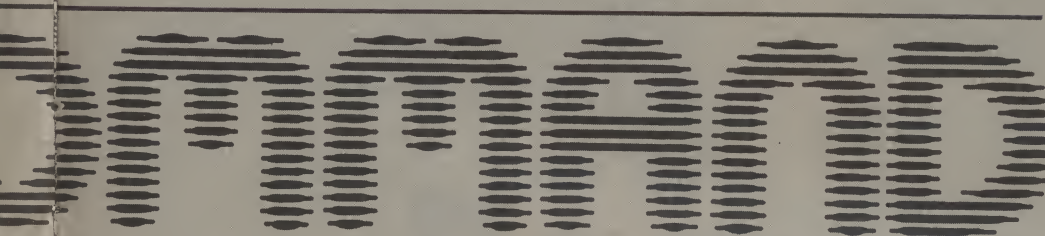
```

1004 PRINT AT a,b;"(sp;g6;2*ig3
)"
1005 PRINT AT g-1,e+2;" "; AT g
+1,e+2;" "
1006 PRINT AT g,e+2;"f": BEEP .
02, INT ( RND *10)
1010 IF b >= 29 THEN CLS : PRIN
T FLASH 1;"Plane out of missile
range": PAUSE 0: GO TO go
1015 LET b=b+1
1020 LET g=g-1
1030 IF g=a AND e=b THEN PAUSE
500: GO TO 1500
1040 NEXT z
1050 PRINT AT 21,0;"Missile bur
nt up in atmosphere.": FOR a=1 T
O 20: BEEP .02,20-a: NEXT a: BEE
P 1,-20
1055 FOR a=1 TO 2: PAUSE 0: NEXT
a
1060 GO SUB go
1500 PRINT AT 21,0;"You hit the
plane.": PAUSE 200
1510 PRINT AT 21,0;"Press any k
ey.": PAUSE 0:
GO TO 2000
2000 CLS : LET Z$="Press any key
for another game.....
.....@ 1984 Stephe
n Page.....Press any key
.....Missile comma
nd....."
2010 PRINT AT 11,0;Z$(1 TO 31)

2020 LET z$=z$+z$(1): LET z$=z$(
2 TO )
2030 BEEP 1/100, RND : IF INKEY
$ <> "" THEN CLS : GO TO 10
2040 GO TO 2010

```





105 Checks if alien ship is still in range (i.e. still on the screen).

110 Moves alien 1 position to the right every five times the MAIN loop is executed. This means that the base can be moved five times as fast as the ship (though the programmer has used a cunning trick here — see notes for

120

FIRE routine).

Keeps the program repeating the MAIN loop until an exit is made to the END routine at line 2000.

**FIRE ROUTINE**

1000 Sets up a loop counter for each missile position. Re-prints alien ship.  
1004 Erase old missile and  
1005-1006 print new.

1010- Move ship to right and  
1015 check for range. Line 1015 is the cunning bit. It makes the alien move to the right as fast as the missile is moving up the screen, to help him escape.

1020 Moves missile up one character position.

1030 Jumps to line 1500 if hit is scored.

1040 Loops back to start of FIRE routine if missile still below top of screen.

**END ROUTINE**

1050 Missile at top of screen.

1055- Wait for a double key press to continue at line 2000

1500- Print Hit message.

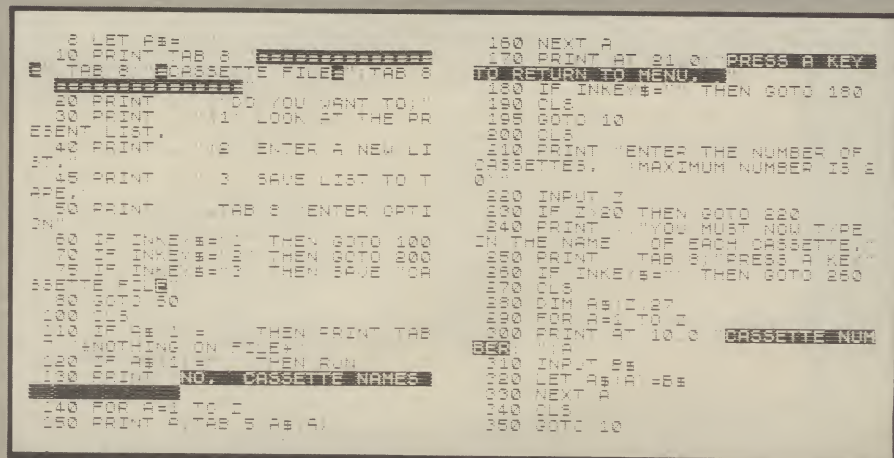
1510  
2000- Set up title etc, in string variable Z\$ and then  
2040 PRINT repeatedly, removing first character each time (to give appearance of text moving left to right) until a key is pressed to re-start game.

## BEGINNER

**CASSETTE FILE**

**K**ee a record of your recorded programs with Computer File, written for the 16K ZX-81 by James Broadhurst and Neal Card of Bollington, Cheshire.

The program allows you to store records of up to twenty cassettes on tape, and has enabled James and Neal to sort out their program collection and keep an eye on where it all is.





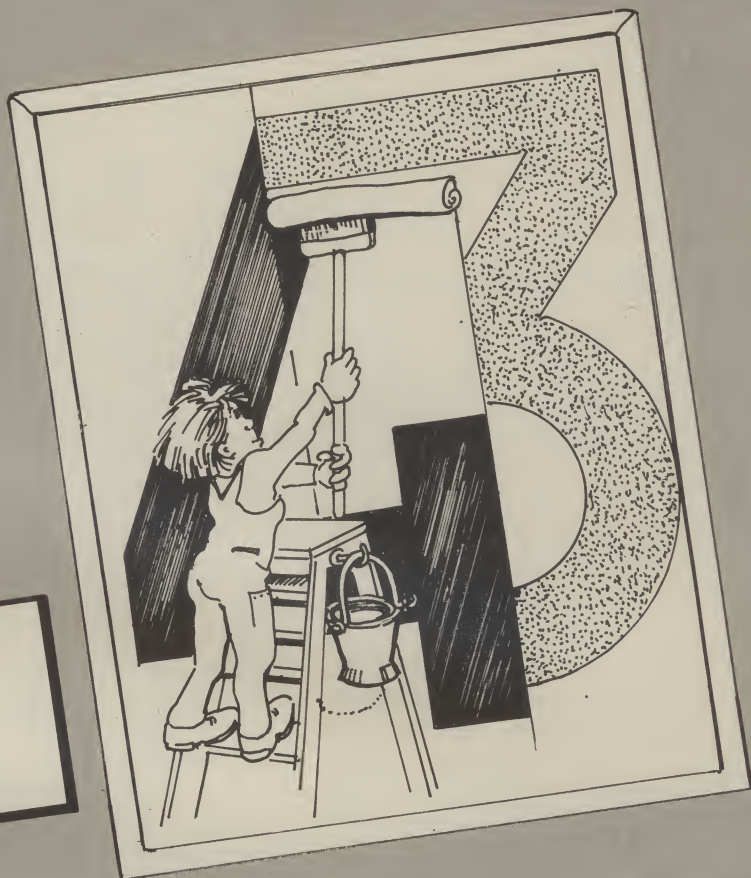
## RENUMBER

**R**enummering programs is often useful, both to make them look tidy, or to create a little more room in a subroutine. With these lines at the end of your listing, you can Renumber programs on the 48K Spectrum or Spectrum Plus as often as you wish. Simply enter GOTO 9997 when you wish to change line numbers, and the program will prompt you.

Note that only line numbers will be changed. Numbers within lines, following statements such as GOTO and GOSUB will not be changed.

Written by G Bennett of Hillingdon, Middlesex.

```
9997 LET s= PEEK 23635+256*( PEEK
K 23636): INPUT "in steps of?";s
t: INPUT "begin at?";b
9998 IF ( PEEK s+1)+(256* PEEK s
)>9996 THEN STOP
9999 POKE s, INT (b/256): LET s=s+4
+1,b-256* INT (b/256): LET s=s+4
+ PEEK (s+2)+ PEEK (s+3)*256: LE
T b=b+st: GO TO 9998
```



## BEGINNER

## COIN DROP

**D**rop your coins into the box which appears on the bottom of the screen by pressing any key. Your coin is held in a claw suspended from a rail running across the top. Each time you hit your target you are awarded a sum of money. To continue playing press any key. All underlined characters are to be entered in graphics mode.

Coin Drop was written for the Spectrum by Jamie Monk from Crawley.



```
5 LET mi=0
10 LET mib=0
30 CLS : LET m= INT ( RND *10)
+1
31 IF m=1 THEN LET v=50: LET
a$="D": LET b$="Fifty Pence"
32 IF m >= 2 THEN LET v=1: LE
T a$="o": LET b$="One Penny"
34 IF m >= 6 THEN LET v=5: LE
T a$="*": LET b$="Five Pence"
36 IF m >= 9 THEN LET v=10: L
ET a$="O": LET b$="Ten Pence"
40 PRINT AT 0,5: INVERSE 1;b$

45 PRINT AT 9,0: "(32*ig3)"
50 LET pob= INT ( RND *26)+5

70 PRINT AT 20,pob;"AB"
75 FOR f=0 TO 31
80 PRINT AT 10,f;"C"
90 PAUSE 5
100 IF INKEY$ <> "" THEN GO
TO 200
110 PAUSE 1: PRINT AT 10,f;" "
```

```
: NEXT f
120 LET mi=mi+1: IF mi#5 THEN
GO TO 300
130 GO TO 30
200 FOR g=10 TO 19
210 PRINT AT g,f;a$
220 PAUSE 2: PRINT AT g,f;" "

230 NEXT g
240 IF f=pob OR f=pob+1 THEN G
O TO 260
241 LET mi=mi+1: IF mi=5 THEN
GO TO 300
245 PRINT AT 20,f;"X": BEEP .3
,-30: BEEP .3,-50
246 PRINT AT 10,0:"YOU MISSED"
: PRINT "PRESS A KEY"
247 PAUSE 0: GO TO 30
260 PRINT AT 20,pob; INK 2;"AB"
": BEEP .03,55: BEEP .03,50: BEE
P .04,50: BEEP .04,50: BEEP .03,
55
265 LET mib=mib+v
270 PRINT AT 10,0;"Well Done!"
```

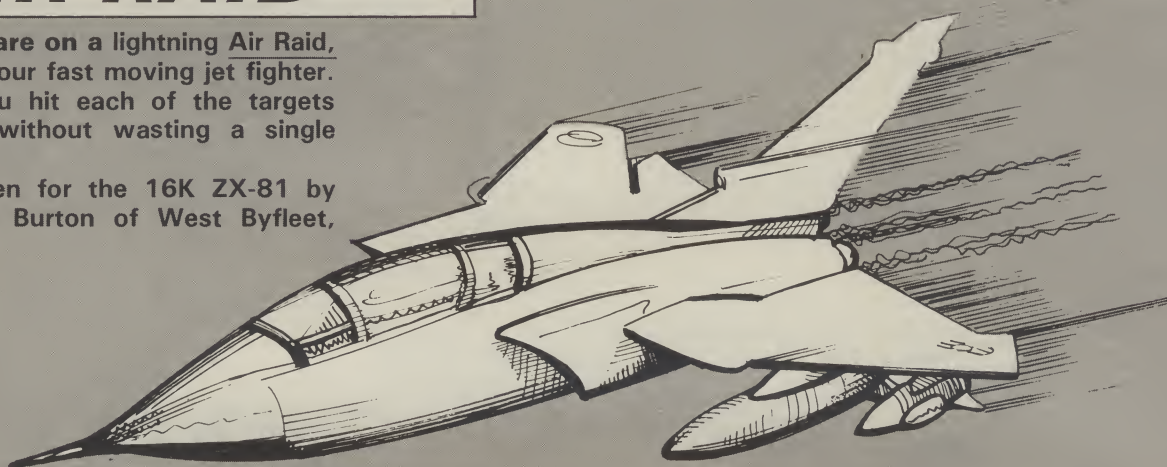
```
You Dropped: "; AT 11,0; INK 2;b
$; INK 0;" In the Box"
280 PAUSE 0: GO TO 30
300 BEEP .5,-40: BEEP .5,-50
310 PRINT "You Have Collected "
;mib;" Pence"
320 INPUT "Play Again ? (y/n) "
;f$
330 IF f$(1)="y" THEN RUN
340 IF f$(1)="n" THEN STOP
350 GO TO 320
9990 FOR f= USR "a" TO USR "d"+
7: READ a: POKE f,a: NEXT f
9991 DATA 0,15,48,48,47,32,32,63
9992 DATA 0,248,4,6,250,2,2,254
9993 DATA 124,124,16,56,84,84,84
,0
9994 DATA 60,66,153,165,165,153,
66,60
9995 RUN
9999 SAVE "Coin Drop" LINE 9990
```



## AIR RAID

**Y**ou are on a lightning Air Raid, in your fast moving jet fighter. Can you hit each of the targets below without wasting a single bomb?

Written for the 16K ZX-81 by Charles Burton of West Byfleet, Surrey.



```

1 LET Z=0
2 DIM U(5)
3 LET S=0
4 PRINT AT 0,10;"AIR-RAID"
5 LET A$=""
6 PRINT AT 20,0;A$+A$+A$+A$
7 FOR D=1 TO 10
8   FOR N=1 TO 5
9     LET U(N)=INT (RND*27)+4
10    PRINT AT 19,U(N);CHR$ 173
11  NEXT N
12  FOR A=27 TO 1 STEP -1
13    PRINT AT 5,A;"-0:"
14  IF INKEY$="0" THEN GOTO 130
15  NEXT A
16  PRINT AT 5,A;" "
17  PRINT AT 19,0;" "
18  NEXT D
19  PRINT AT 5,0;"YOUR HITS/SHOTS=";S;"/";Z
20  STOP
21  LET Z=Z+1
22  FOR F=7 TO 19
23    PRINT AT F,A+1;"*";AT F-1,A+1;" "
24  NEXT F
25  FOR Y=1 TO 5
26    IF U(Y)=A+1 THEN GOTO 180
27  NEXT Y
28  PRINT AT F-1,A+1;" "
29  NEXT A
30  LET S=S+1
31  PRINT AT F-1,A+1;CHR$ 151
32  NEXT A
33  GOTO 90

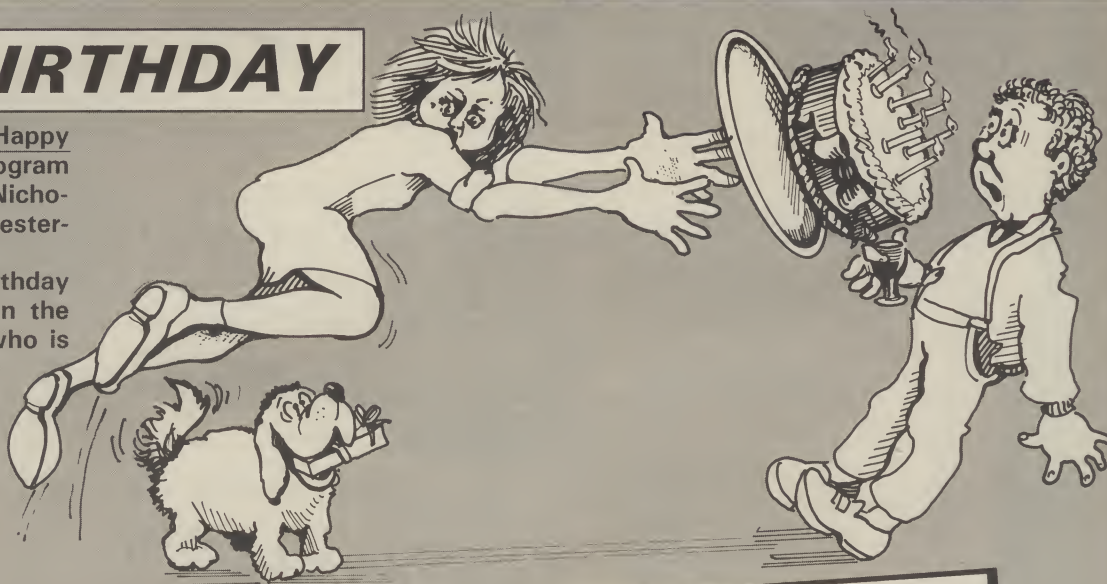
```

## BEGINNER

## HAPPY BIRTHDAY

**W**ish your friends a Happy Birthday with this program written for the Spectrum by Nicholas Moyle of Dursley, Gloucestershire.

The program will play a birthday tune and display a pattern in the favourite colour of anyone who is having a birthday.



```

1 CLS
2 INPUT "Who has got a birthday today? (Please enter your name) ";a$
3 CLS : INPUT "What is your favourite colour? (Enter a number 0 to 6) ";b
4 CLS
5 INK b
6 BORDER b
7 FOR f=0 TO 3: PRINT AT f,0

```

```

8 "HAPPY BIRTHDAY ";a$
9 NEXT f
10 BEEP .25,0: BEEP .25,0: BEEP .5,2: BEEP .5,0: BEEP .5,5: BEEP 1,4
11 BEEP .25,0: BEEP .25,0: BEEP .5,2: BEEP .5,0: BEEP .5,7: BEEP 1,5
12 BEEP .25,0: BEEP .25,0: BEEP .5,12: BEEP .5,9: BEEP .5,5: BEEP .5,4: BEEP 1,2

```

```

13 BEEP .25,10: BEEP .25,10: BEEP .5,9: BEEP .5,5: BEEP .5,7: BEEP 1,5
14 FOR s=-40 TO 40 STEP 1: BEEP .005,s: PLOT s+120,140: NEXT s
15 PLOT 70,110
16 DRAW 4,4,4040
17 STOP
18 SAVE "Birthday" LINE 1: RUN

```



Alien space ships are streaking towards the earth. You have been chosen for an assignment which could save the earth, using the new ray missile guidance system to shoot the ships before they can land. Failure means death, success will earn you the thanks of the President and of everyone on earth.

Doomsday 85 was written for the 16K ZX-81 by J Stubbs of Chester, Cheshire.

Remember that line 0 can be produced by entering the line which you wish to become line 0 as line 1, and then entering, as direct commands POKE 16509,0 and POKE 16510,0.

# DOOMSDAY

```
0 REM E:RND? TAN
1 REM MISSILE DEFENCE
40 GOSUB 820
40 CLS
50 LET R=INT (RND*10)+3
60 LET DES=0
70 LET LD=0
80 LET MIS=R*RR
90 LET R$="FOT"
```

```
95 LET T$="FOT"
```

```
100 LET S$=" "
```

```
110 GOSUB 750
120 LET E=16
130 LET F=16
140 GOSUB 420
150 LET X=0
160 LET Z=0
170 GOSUB 750
175 IF R=0 THEN GOTO 1100
180 LET D=2
190 LET A=INT (RND*25)+1
200 LET D=D+1
210 LET B=INT (RND*(25-A))+A
220 FOR Z=A TO 8
225 IF RND>.7 THEN PRINT AT D,Z
230 IF RND<.7 THEN PRINT AT D,Z
```

```
235 IF RND<.7 THEN PRINT AT D,Z
240 LET P=USR 16514
250 IF P<>0 THEN GOTO 650
260 IF X>0 THEN GOSUB 580
270 GOSUB 410
280 PRINT AT D,Z;S$
290 NEXT Z
300 LET D=D+1
310 LET A=INT RND*8
320 FOR Z=B TO A STEP -1
325 IF RND>.7 THEN PRINT AT D,Z
330 IF RND<.7 THEN PRINT AT D,Z
```

```
340 LET P=USR 16514
350 IF P<>0 THEN GOTO 650
360 IF X>0 THEN GOSUB 580
370 GOSUB 410
380 PRINT AT D,Z;S$
390 NEXT Z
400 GOTO 200
410 IF INKEY$="" THEN RETURN
420 PRINT AT 17,E-2; " " AT 1
7,E;
430 LET E=E+(INKEY$="8" AND E<2)
440 IF INKEY$="5" AND E<2)
450 RETURN
```

```
460 IF MIS=0 THEN RETURN
470 LET MIS=MIS-1
480 GOSUB 800
490 LET X=X+1
500 FOR F=16 TO 3 STEP -1
510 PRINT AT F,E;
520 LET P=USR 16514
530 IF P=135 THEN NEXT F
540 PRINT AT F,E; " " AT F,E; "I"
550 IF P=28 THEN GOTO 610
560 PRINT AT F,E;
570 RETURN
580 NEXT F
590 LET X=0
600 RETURN
610 PRINT AT F-1,E; "0"
```

```
620 PRINT AT 4,10;"YOU GOT HIM?"
```

```
630 LET DES=DES+1
640 GOTO 670
650 PRINT AT D-1,Z-2;"HE LANDED"
```

```
660 LET LD=LD+1
670 LET R=R-1
680 PAUSE 100
700 FOR Z=2 TO 13
710 PRINT AT Z,0;" "
```

```
720 NEXT Z
730 PRINT AT 17,E-2;" "
740 GOTO 120
750 PRINT AT 0,6;"ALIENS SIGHTED"
760 PRINT AT 1,6;"DESTROYED:";D
770 PRINT AT 14,0;" "
```

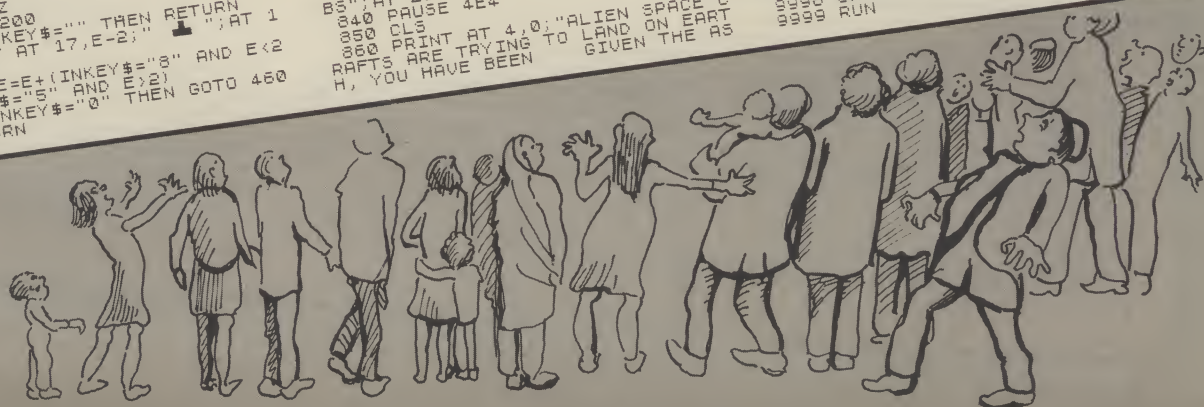
```
780 PRINT AT 18,4;"MISSILE GUIDANCE CONTROL"
790 PRINT AT 19,0;" " PO
800 PRINT AT 19,0;" " PO
810 RETURN
820 PRINT AT 10,0;" "
```

```
830 PRINT AT 15,10;"BY JED STUBBS"
840 PAUSE 4E4
850 CLS
860 PRINT AT 4,0;"ALIEN SPACE CRAFTS ARE TRYING TO LAND ON EARTH. YOU HAVE BEEN GIVEN THE ASSIGNMENT TO USE THE NEW 'RAY MISSILE GUIDANCE SYSTEM' TO DESTROY THEM, IF THEY LAND THE EARTH WILL BE DOOMED."
```

```
870 PRINT "BEFORE YOU, AS EACH CRAFT COMES INTO VIEW, MOVE YOUR GUIDANCE SYSTEM: '8' LEFT, '5' RIGHT, SO THAT THE RAY IS CLOSE IN LINE TO THE CRAFT. FIRE A MISSILE PRESS '0' FOR GUIDANCE USE"
872 PRINT AT 20,28;"N/L"
874 PAUSE 4E4
876 CLS
880 PRINT AT 4,0;"YOU MUST PENETRATE THE CENTRAL DEFLECTOR AND DESTROY THE COMPUTER. IF YOU MISS WITH YOUR FIRST MISSILE, FIRE AGAIN BUT DO NOT PRESS THE BUTTON. THE ALIENS FROM TIME TO TIME TURN ON A FORCE FIELD WHICH MAKES YOUR MISSILE INACTIVE."
887 PRINT AT 20,28;"N/L"
890 PAUSE 4E4
900 CLS
1000 PRINT AT 6,2;"WHAT LEVEL DO YOU WISH: 1-3 MISSILE F 2-3 3-3 4-4"
OR EACH SIGHTING
```

```
1010 PRINT AT 12,2;"KEY IN THE NUMBER:"
1020 INPUT RR
1030 IF RR<5 THEN RETURN
1040 GOTO 1020
1050 RETURN
1100 IF LD>1 THEN PRINT AT 10,10;"YOU FAILED" THEN PRINT AT 8,0;"STOP"
1110 IF LD=1 THEN PRINT AT 8,0;"GROUND FORCES ARE ABLE TO DEAL WITH THE ONE THAT LANDED. THE PRESIDENT WANTS TO THANK YOU."
```

```
1120 IF LD=0 THEN PRINT AT 8,0;"WELL DONE YOU DESTROYED THEM ALL. THE PRESIDENT WANTS TO THANK YOU."
1130 STOP
9998 SAVE "MISSILE"
9999 RUN
```





## Dear Diary

Dad's been nagging me to write a program. He wants me to prove that I understand the Spectrum. He claims he only bought the machine because I told him it would turn me into a computer programmer.

Showing great patience, I explained that the Spectrum HAD been educational; it had taught me that thinking you needed to be a programmer in order to use a computer was like thinking you needed to be a mechanic in order to drive. Using it to zap aliens, as he correctly described my habits, was the true, progressive way to employ the device.

I also told him I couldn't have got this job writing for Sinclair Programs if I didn't know SOMETHING. He said that all I knew was my sister, "a computer virtuoso"

I decided that if I write a music routine then even someone of Dad's generation would be able to understand the skill involved — and it would be handy for the magazine.



After some lengthy sessions where I explained the principles involved to my little sister Eustacia, I'd sorted out the main part of the program. As I told her, the first line dimensioned an array which would be filled, in line 2, by the values of the notes contained in line 4. Lines 30 and 32, meanwhile, sat in the main loop which created your aliens and your missiles and your smart bombs and your nuclear laser gun.

```
1 DIM P(100): LET P=0
```

```
2 FOR X=1 TO 96: READ P(X): NEXT X
```

```
4 DATA . . . (the values of the notes) . . .
```

```
30 LET P=P+1: IF P=96 THEN LET P=1
```

```
32 BEEP .05,P(P)
```

However, I explained, in longer programs this routine might slow the response to key presses for the missiles and bombs and stuff. So we should stop the tune if keys were being pressed by deleting line 32, replacing line 30, and adding new lines.

```
30 IF NOT LEN INKEY$ OR IN 32766=191 THEN  
GO TO 100
```

```
100 IF LEN INKEY$ OR NOT IN 32766=191
```

```
THEN GO TO 35
```

```
110 LET P=P+1: IF P=96 THEN LET P=1
```

```
115 BEEP .05,P(P)
```

```
120 GO TO 100
```



This is when Eustacia shocked me very much by refusing to calculate the DATA values for line 4 — even when I explained how very educational she would find it.

Several days later I had written line 4 as follows,

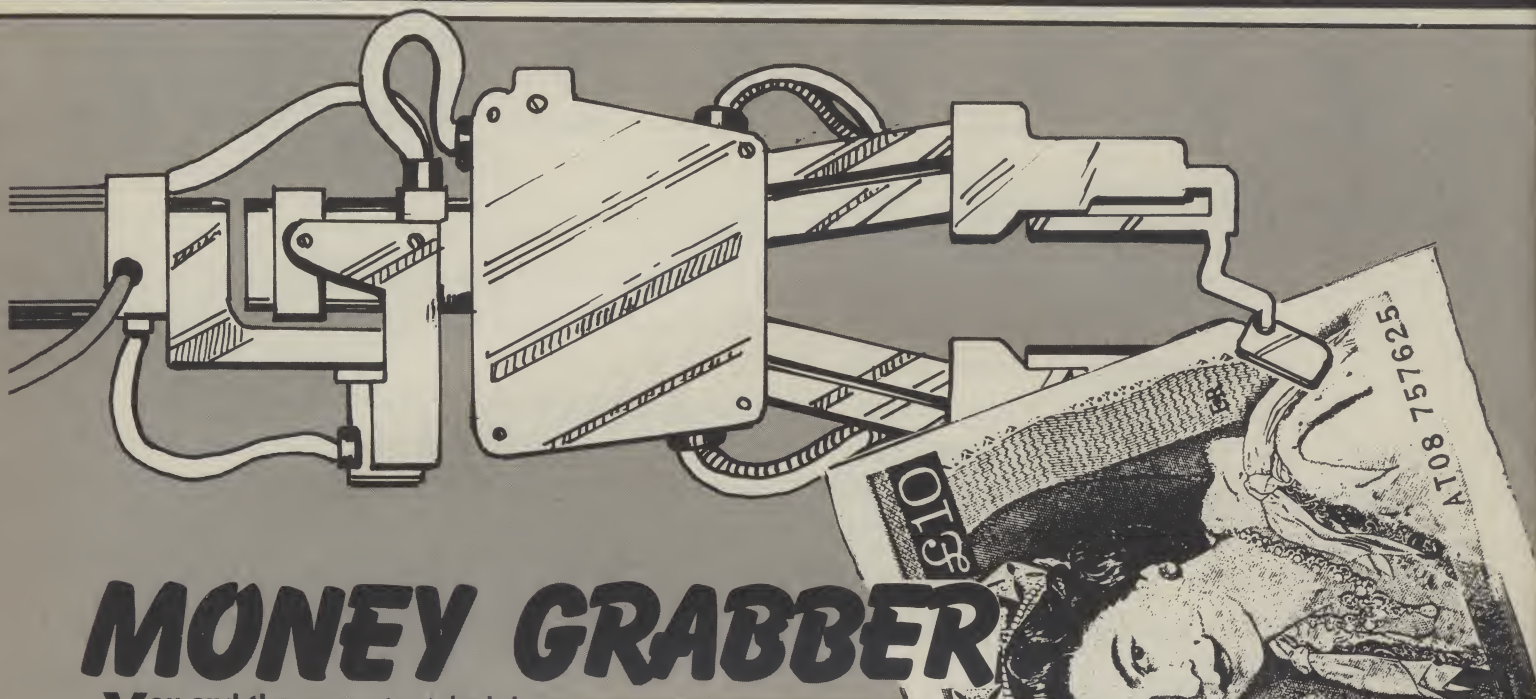
```
4 DATA 69,2,14,13,14,9,12,10,7,69,-2,2,7,9,69,2,6,9,10,69,2,1,4,13,14,9,  
12,10,7,69,-2,2,7,9,69,2,10,9,7,69,69,9,10,12,14,5,15,14,12,3,14,12,10,2,  
12,10,9,2,14,13,14,9,12,10,7,69,-2,2,7,9,69,2,6,9,10,69,2,14,13,14,9,12,  
10,7,69,-2,2,7,9,68,2,10,9,7,69,69,69
```

However, I made sure Dad saw me sweating over this music. I'm going to convince him that buying me a new stereo system would help me learn classical guitar.



Sid





# MONEY GRABBER

You and the computer take it in turns to collect money from a grid. On this grid it is only possible to move right and down, so you can never retrace your steps. The computer is playing blind so it is allowed three times as many chances as you, and is also allowed an extra pound for luck whenever it finds a pound. Your reactions must be fast and precise in order to beat the computer.

Money Grabba was written for the 16K ZX-81 by M Phillips of Redland, Bristol.

```

00REM COPYRIGHT MAP
1 REM *** "MONEY GRABBA" ***
2 REM
50 CLS
52 PRINT " *** "MONEY GRAB
BA" ***
54 PRINT "
55 PRINT " THE COMPUTER: ""
YOU: ""
56 PRINT
58 PRINT "MOVING WITH KEYS: 8 R
IGHT AND: 6 DOWN, YOU TAKE TURNS
WITH THE COMPUTER TO GRAB MON
EY. WHEN THE COMPUTER GRABS A POU
ND IT GAINS ANOTHER (FOR LUCK) I
T NEEDS TWO POUNDS MORE THAN YOU
TO WIN."
62 PRINT "SOME OF THE MONEY WI
LL EITHER APPEAR TOO FAR AWAY
OR ELSE IT MAY DISAPPEAR VERY Q
UICKLY, THIS GIVES THE COMPUTER A
FIGHTING CHANCE."
66 PRINT "THE COMPUTER GOES FI
RST AND HAS THREE ATTEMPTS AT GR
ABING SOME MONEY, YOU ONLY HAVE
ONE ATTEMPT SO MAKE SURE YOUR AI
M IS TRUE."
68 PRINT AT 21,10;"GOOD LUCK"
99 IF INKEY$="" THEN GOTO 99
100 LET B0=4
110 LET P0=B0
300 GOSUB 5000
400 LET O=0
500 LET R=0
600 RAND
700 LET P=28
1000 LET A=INT (RAND*8)+1
1005 LET P=P+1
1010 LET B=INT (RAND*8)+9
1020 PRINT AT A,B;CHR$ (12)
1030 LET X=1
1040 LET Y=8
1045 IF O=1 THEN GOTO 3000
1050 FOR N=1 TO 12
1060 LET C=INT (RAND*2)
1070 IF C THEN LET X=X+1
1080 IF NOT C THEN LET Y=Y+1
1090 PRINT AT X,Y;CHR$ (128)
1098 PRINT AT X,Y;CHR$ (0)
1100 IF X=A AND Y=B THEN GOTO 12
05
1200 NEXT N
1202 GOTO 1210
1205 LET R=1

```

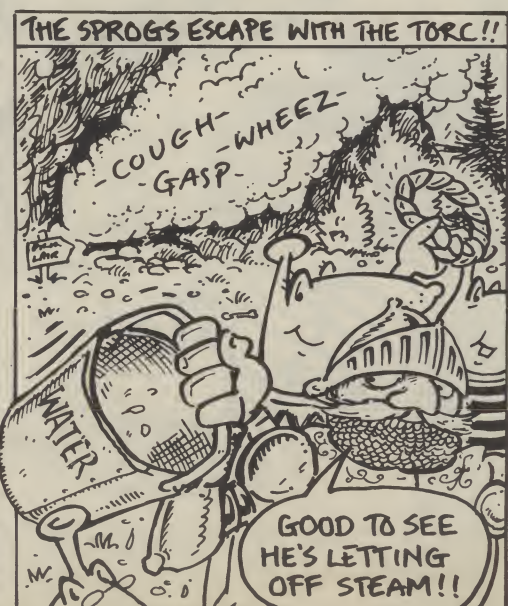
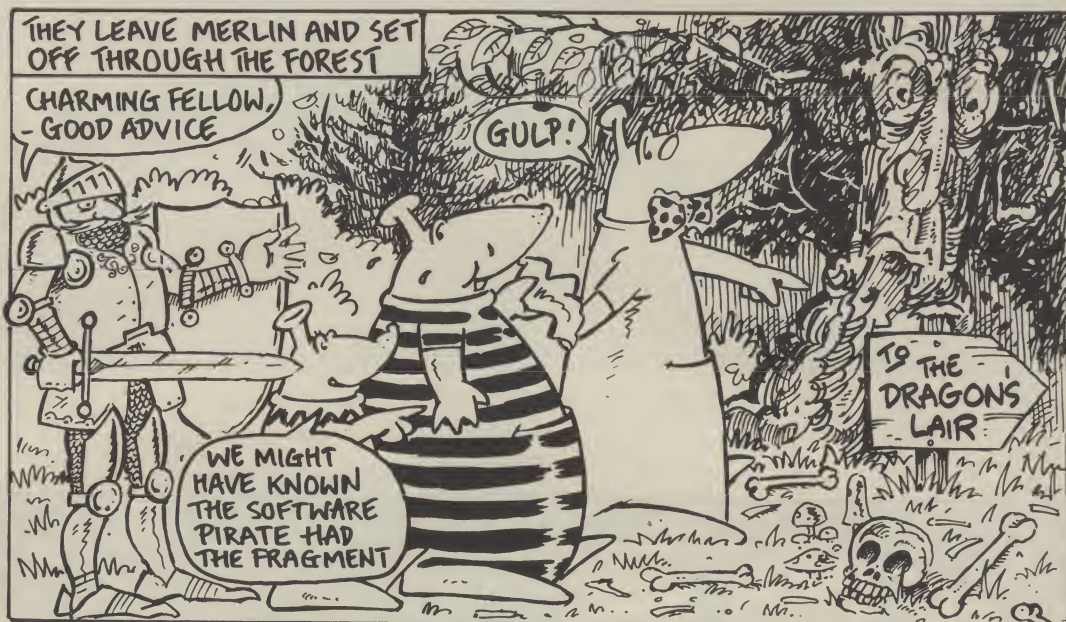
```

1210 PRINT AT A,B;CHR$ (0)
1310 IF R=1 THEN GOTO 2500
1315 IF P=31 THEN GOTO 2000
1320 GOTO 1000
2502 LET O=1
2505 IF R=0 THEN GOTO 2520
2508 PRINT AT 17,P0;CHR$ (12);AT
17,P0+2;CHR$ (12)
2510 LET P0=P0+4
2520 IF P0>26 THEN GOTO 6000
2530 IF INKEY$="" THEN GOTO 2530
2500 GOTO 500
3003 LET K=INT (RAND*16)+4
3004 FOR F=1 TO K
3005 PRINT AT X,Y;CHR$ (8)
3007 PRINT AT X,Y;CHR$ (0)
3009 LET X=X+(INKEY$="6")
3010 LET Y=Y+(INKEY$="8")
3020 IF X=A AND Y=B THEN GOTO 40
00
3030 NEXT F
3032 PRINT AT A,B;CHR$ (0)
3037 IF INKEY$="" THEN GOTO 3037
3040 GOTO 400
4000 PRINT AT A,B;CHR$ (0);AT 19
,B0;CHR$ (12)
4005 LET B0=B0+2
4010 IF B0=24 THEN GOTO 6000
4020 IF INKEY$="" THEN GOTO 4020
4040 GOTO 400
5000 CLS
5003 FAST
5005 FOR N=0 TO 13
5010 PRINT AT N,7;CHR$ (3);AT N,
22;CHR$ (3)
5020 NEXT N
5022 FOR N=1 TO 29
5023 PRINT AT 15,N;CHR$ (133);AT
21,N;CHR$ (133)
5025 NEXT N
5028 FOR N=3 TO 21
5030 PRINT AT 0,N;CHR$ (133);AT
13,N;CHR$ (133)
5036 NEXT N
5040 FOR N=15 TO 21
5042 PRINT AT N,0;CHR$ (2);CHR$
(1);AT N,30;CHR$ (3)
5044 NEXT N
5046 PRINT AT 15,1;CHR$ (133);AT
21,1;CHR$ (133)
5048 PRINT AT 17,2;CHR$ (128);AT
19,2;CHR$ (8)
5050 POKE 16418,0
5052 PRINT AT 22,5;"*** "MONEY
GRABBA" ***"
5054 PRINT TAB 5;"
5150 SLOW
5152 RETURN
6000 IF P0>26 THEN GOTO 7000
6002 FOR N=4 TO 22
6004 PRINT AT 19,N;CHR$ (8)
6008 NEXT N
6010 FOR N=1 TO 25
6020 PRINT AT 19,B0;CHR$ (0)
6040 PRINT AT 19,B0;CHR$ (12)
6060 NEXT N
6070 IF INKEY$="" THEN GOTO 6070
6080 RUN
7000 FOR N=4 TO 26
7002 PRINT AT 17,N;CHR$ (128)
7006 NEXT N
7008 FOR N=1 TO 25
7020 PRINT AT 17,P0;CHR$ (0)
7040 PRINT AT 17,P0;CHR$ (12)
7060 NEXT N
7070 IF INKEY$="" THEN GOTO 7070
7777 RUN
9997 CLEAR
9998 SAVE "MONEY GRABBA"
9999 RUN

```



# SPROGS

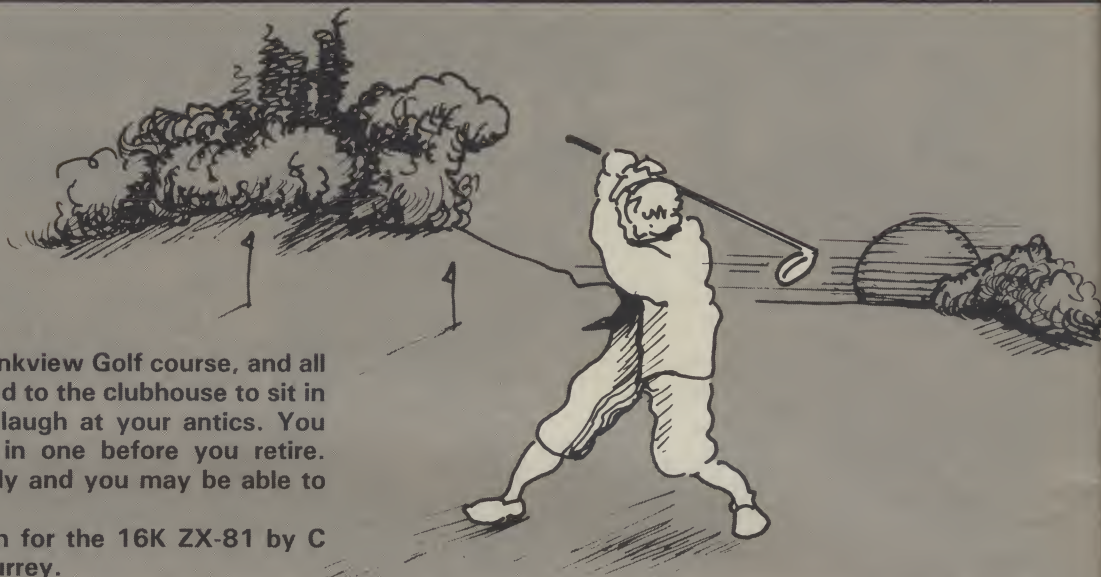




# TEA FOR ONE

The sun is setting at Dankview Golf course, and all your friends have retired to the clubhouse to sit in armchairs, drink tea, and laugh at your antics. You have determined to hole in one before you retire. Choose your clubs carefully and you may be able to retire before midnight!

Tee for One was written for the 16K ZX-81 by C Burton of West Byfleet, Surrey.



```

228 DIM S(9)
229 LET A$=""
230 LET Z=1
240 LET DIS=INT (RND*435)+120
250 PRINT AT 19,0;A$+A$
260 LET B=1
270 PRINT AT 1,0;"YARDS:";DIS
280 PRINT AT 15,25;"0";TAB 24;"
290 TAB 24;"5";TAB 24;"10";
300 PRINT AT 0,0;"HOLE:";Z;"
310 CLUS:1,4,6,8"
100 PRINT AT 2,0;"CHOOSE YOUR N
EXT CLUB"
120 LET DRI=INT (RND*30)+230
130 GOSUB 700
140 LET D=17
150 FOR E=21 TO 1 STEP -2
160 PRINT AT D,E;" ";AT D+1,E+2
170 LET D=D-1
180 NEXT E
190 CLS
200 LET D=30
210 FOR E=2 TO 18 STEP 2
220 PRINT AT E,D;" ";AT E-2,D+1
230 LET D=D-1
240 NEXT E
250 LET DIS=DIS-INT (DRI*F)
260 IF DIS<-50 THEN LET DIS=ABS
270 LET B=B+1
280 IF DIS<20 AND DIS>-20 THEN
GOTO 300
290 IF DIS<50 AND DIS>-50 THEN
GOTO 400
300 GOSUB (INT (RND*3)+20)+300
310 PRINT AT 3,0;"YOU ARE ";DIS
320 YARDS FROM THE PIN"
293 PRINT AT 18,22;" "

```

```

295 GOTO 80
300 CLS
310 PRINT "YOU ARE ON THE GREEN
320 ENTER THE LINE OF THE PUTT.(3/
10)"
320 FOR A=3 TO 19
330 PRINT AT A,0;A$+A$
340 NEXT A
350 LET G=INT (RND*16)+3
360 PRINT AT G,15;" "
370 INPUT H
375 IF H<3 OR H>19 THEN GOTO 37
0
380 FOR A=1 TO 15
390 PRINT AT H,A;" "
393 NEXT A
394 IF H=6 THEN GOTO 500
395 LET B=B+1
396 GOTO 300
400 CLS
410 PRINT "FROM HERE YOU MUST P
LAY A PITCH SHOT"
420 PRINT "ENTER A NUMBER(1/3)"
430 INPUT I
440 LET B=B+1
450 IF I<>INT (RND*3+1) THEN GO
TO 300
460 PRINT "BAD PITCH,TRY AGAIN"
470 GOTO 420
480 CLS
490 PRINT "YOU HOLED IN ";B;" S
TAKES"
500 LET S(Z)=B
510 PRINT "PRESS ANY KEY"
520 IF INKEY$="" THEN GOTO 535
537 CLS
540 LET Z=Z+1
545 IF Z<10 THEN GOTO 31
550 CLS
560 PRINT "THE CARD OF THE COUR

```

```

SE";AT 4,5;"HOLE:          SCORE:"
565 LET T=0
570 FOR A=1 TO 9
580 PRINT AT A+6,6;A;AT A+6,19;
S(A)
590 LET T=T+5(A)
595 NEXT A
596 PRINT ",,,";"YOU WENT ROUND I
N ";T
598 STOP
700 INPUT J
701 IF J<>1 AND J<>4 AND J<>5 A
ND J<>8 THEN GOTO 700
710 IF J=1 THEN LET F=.1
720 IF J=4 THEN LET F=.817
730 IF J=5 THEN LET F=.615
740 IF J=8 THEN LET F=.41
750 RETURN
800 PRINT AT 19,0;A$+A$+A$+A$
810 PR"   AT 5,0;"YOU ARE ON TH
E FAIRWAY"
815 RETURN
820 LET B$=""
825 PRINT AT 19,0;B$+B$+B$+B$
830 LET DIS=DIS+70
830 PRINT AT 5,0;"YOU DROVE INT
O THE ROUGH"
835 RETURN
840 PRINT AT 16,0;A$+" ";AT 16,
27;A$ ( TO 5)
850 PRINT AT 17,16;" ";AT 17,27
;" ";TAB 16;" ";AT 18,27;" ";TAB
16;A$ ( TO 12)
860 PRINT AT 5,0;"YOU FELL IN A
BUNKER"
870 LET DIS=DIS+120
880 RETURN
900 SAVE "GOLF"
910 RUN

```



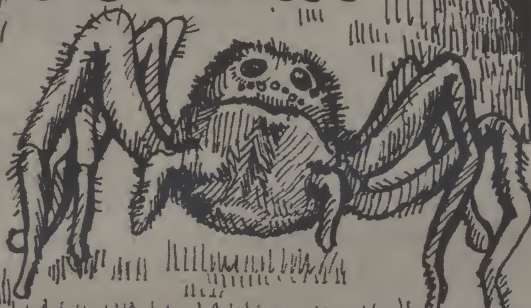


**Y**ou are the spider chief in exile. You wish to return to your spider domain. All you have to do is cross the two persian carpets in the living room. However, the owners of the house hate spiders and have placed a selection of lethal traps on the carpet.

Use keys 5 and 8 to move as many of your people as is possible across the first carpet. Use keys 6 and 7 to move across the second carpet. The first spider to reach the spider domain will open the gates and lead you all to safety.

Spider Domain is based on a program written for the 16K ZX-81 by Paul Arthwell and Simon Hodgkins of Wolverhampton.

## SPIDER DOMAIN



```

85 RAND
90 LET I=0
95 LET Y=0
104 PRINT AT 19,4;"(PRESS (S) T
O START)"
105 IF INKEY$="S" THEN GOTO 107
106 GOTO 105
107 CLS
108 LET X=1
109 LET S=0
110 REM SCREEN 1
111 LET G=0
120 PRINT AT X,Y;"X"
130 LET X=X+1
140 IF X=20 THEN GOTO 150
145 GOTO 120
150 LET A=0
155 LET X=INT (RND*7)+7
156 LET Y=INT (RND*29)+1
165 LET A=A+1
170 PRINT AT X,Y;"X"
175 IF A=65 THEN GOTO 185
180 GOTO 155
185 LET X=19
190 LET P=1
195 LET Q=1
200 LET Y=INT (RND*15)+5
205 LET U=INT (RND*25)+2
210 PRINT AT P,U;
215 PRINT AT X,Y;" "
220 LET P=P+Q
225 PRINT AT P,U;
230 LET U=PEEK (PEEK 16398+256*
PEEK 16399)
245 IF U=189 THEN GOTO 325
246 IF U=131 THEN GOTO 295
247 IF U=11 THEN GOTO 325
248 IF U=23 THEN GOTO 325
255 PRINT "O";AT P,U;
260 FOR T=1 TO 6
265 NEXT T
270 PRINT " "AT P,U;
275 IF INKEY$="S" THEN LET W=W+
1
280 IF INKEY$="S" THEN LET W=W-
1
285 IF P>18 THEN GOTO 325
290 GOTO 210

```

```

295 LET S=S+1
296 IF S=10 THEN GOTO 400
300 PRINT AT 0,0;S;" SPIDERS CR
305 PRINT AT 18,0;"X"
310 PRINT AT 19,0;"X"
315 PRINT AT 19,0;"X"
320 GOTO 185
325 LET I=I+1
330 IF I=10 THEN GOTO 350
335 PRINT AT 0,17;I;" SPIDERS D
340 PRINT AT 18,0;"X"
341 PRINT AT 19,0;"X"
345 GOTO 185
355 CLS
356 LET G=0
375 PRINT AT 8,0;"
ON WAS
SUCCESSL
HEROS)
380 LET G=G+1
385 IF G=50 THEN GOTO 45
390 GOTO 380
400 CLS
401 REM SECOND SCREEN
410 PRINT AT 8,0;"
ART OF YOUR
BEEN SUCCESFUL
415 FOR J=0 TO 200
420 NEXT J
425 CLS
430 PRINT AT 0,0;"NOW CROSS FRO
M LEFT TO RIGHT. USE KEYS 6 AN
D 7 TO STEER"
435 PRINT AT 19,8;"(PRESS (S) T
O CONTINUE)"
436 IF INKEY$="S" THEN GOTO 440
437 GOTO 436

```

```

440 CLS
445 FAST
450 PRINT AT 1,0;"XXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX"
451 PRINT AT 19,0;"XXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX"
460 LET U=0
461 LET X=0
462 LET Y=2
475 PRINT AT Y,X;"X"
480 LET Y=Y+1
485 IF Y>18 THEN GOTO 500
486 LET U=0
495 GOTO 475
500 LET Z=INT (RND*17)+1
505 LET R=INT (RND*20)+6
510 LET U=U+1
515 PRINT AT Z,R;"X"
520 IF U=70 THEN GOTO 540
525 PRINT AT 10,27;"SD"
530 SLOW
535 GOTO 500
540 LET D=0
545 LET X=10
550 LET Y=1
555 PRINT AT X,Y;
560 LET U=PEEK (PEEK 16398+256*
PEEK 16399)
565 IF U=61 THEN GOTO 600
566 IF U=56 THEN GOTO 620
570 PRINT "O";AT X,Y;
575 PRINT AT X,Y;" "
580 IF INKEY$="S" THEN LET X=X+
1
585 IF INKEY$="7" THEN LET X=X-
1
590 LET Y=Y+1
595 GOTO 555
600 LET D=D+1
605 PRINT AT 0,3;" "D;"SPIDER
610 IF D=10 THEN GOTO 355
615 GOTO 545
620 CLS
621 FOR N=1 TO 20
625 PRINT "CONGRATULATIONS: CHI
EF SPIDER"
630 NEXT N

```



## SINCLAIR PROGRAMS



## COMPUTER

**Sinclair Programs has negotiated an exclusive offer for all readers with computer holiday specialists Dolphin Holidays.**

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The Sinclair Program will run at Wellington College, Crowthorne, Berkshire for a week, beginning on August 3rd, 1985. It is open to all readers aged 12-17.

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See you at Wellington College!





# Machine code vertical scroll

**Tony Rickwood continues his series on machine code as he looks again at the procedure for scrolling pictures vertically.**

IN PART one last month, I showed you how to set up a file of addresses to identify which locations in the Spectrum display file referred to Column 0 addresses for each pixel line of the screen display (the left-most character positions). In Part two, you will learn how to use this file to execute the vertical scroll.

First, it is important to understand how the preliminary setting up of a file serves the execution routine we will be developing here. Why is a file of addresses needed when all the information is contained in the Spectrum's own display file? In any case, you might also ask, why can't the problem be dealt with by simply rotating bit patterns vertically instead of horizontally? (Remember how the "RL" and "RR" (Rotate Left/Rotate Right) instructions gave us such a compact solution to the problem of horizontal scrolling?).

Let's take the second question first. Rotation instructions (there are others beside RL and RR, as we shall see) are designed to work only on the bits of a specified byte. All bytes transferred from the display-file to the screen are transferred horizontally, NOT vertically, so there is no way that eight pixels on a vertical line can be identified and manipulated as a single byte of data.

As we must work with whole bytes of data, a possible solution might be to work through consecutive bytes of the display file (though not consecutive on the screen) from the second pixel row down, find out which byte of the display file corresponds to

the location immediately above the screen, and copy the byte from one location to the other. This would be slightly long-winded though, mainly because of the way the display file is configured. Fortunately, the Z80 instruction set contains a powerful block handling instruction which allows the m/c programmer to move a block of data from one area of

## Program 2

```
10 REM Program 2 - Pixel Scroll
1 UP
20 CLEAR 62999: LET s=0: FOR i
=64000 TO 64038: READ n: POKE i,
n: LET s=s+n: NEXT i
30 READ sum: IF s <> sum THEN
PRINT "error in data entry - re
type line 40": STOP
40 DATA 1,192,0,197,8,62,0,1,2
4,246,8,10,95,3,10,87,3,197,10,1
11,3,10,103,1,32,0,237,176,193,8
,60,254,191,56,231,193,16,221,20
1,3451
50 PRINT "data entry o.k." "no
w running m/c": PAUSE 100
60 LIST: RANDOMIZE USR 64000
: STOP
70 SAVE "upcode" CODE 64000,39
```

memory to another. For this application, it enables us to transfer a whole line of data as represented on the screen (32 bytes) to the line above (via the display file) in one go. To use this instruction, we need to know the address of the first byte of the block to be copied (base address) and first byte to be copied to (destination). To move whole lines then, base and destination addresses will be the column 0 addresses in our

pre-computed file.

The program to execute an UPWARD SCROLL is listed as Program 2 (Program 1 being that listed in Part 1). As usual, both Basic and Assembler are given. First, try running the Basic, although you must have previously run Program 1 to create the file. The m/c for both programs loads into the same area of memory (starting at location 64000). The important point though is that Program 1 m/c has been executed to create the file at 63000 before it gets overwritten by Program 2 m/c (line 20).

For the Assembler, understanding is made easier by seeing how the whole screen is moved up by a single pixel (lines 50-270). The outer loop (lines 30-40 and 280-290) to repeat the process 192 times for all pixel lines should be self explanatory, provided you have properly understood what I have previously said about DJNZ loops.

The inner loop, which moves the whole screen by a single pixel only, really revolves around the block handling instruction, LDIR, in line 220. This mnemonic is read as Load, Increment, and Repeat" and is a self-contained automatic loop to do the following:

- 1) Load (DE) with (HL)
- 2) Increment DE and HL
- 3) Decrement BC
- 4) Repeat 1-3 until BC is zero.

As you can see, LDIR is a very powerful instruction. Let us now see how it can be harnessed to



| Assembler | 10 ;ASSEMBLER FOR PROGRAM 2- EXECUTES PIXEL SCROLL UP |
|-----------|-------------------------------------------------------|
| 01C000    | 20 ;                                                  |
| C5        | 30 LD BC,192 ;EXECUTES SINGLE PIXEL                   |
| 08        | 40 SCREEN PUSH BC ;SCROLL 192 TIMES                   |
| 3E00      | 50 EX AF,AF'                                          |
| 011BF6    | 60 LD A,0 ;INITIALIZE ROW COUNTER                     |
| 0A        | 70 LD BC,EF618 ;START OF COL 0 ADDRESSES              |
| 5F        | 80 ROW EX AF,AF' ;START OF LOOP FOR 1 PIXEL SCROLL    |
| 03        | 90 LD A,(BC)                                          |
| 0A        | 100 LD E,A                                            |
| 57        | 110 INC BC                                            |
| 03        | 120 LD A,(BC)                                         |
| C5        | 130 LD D,A ;DE HOLDS ROW TO BE COPIED TO              |
| 0A        | 140 INC BC                                            |
| 6F        | 150 PUSH BC                                           |
| 03        | 160 LD A,(BC)                                         |
| 0A        | 170 LD L,A                                            |
| E7        | 180 INC BC                                            |
| 0A        | 190 LD A,(BC)                                         |
| E7        | 200 LD H,A ;HL HOLDS ROW TO BE COPIED FROM            |
| 012000    | 210 LD BC,32 ;BC HOLDS NO. OF BYTES TO BE COPIED      |
| EDB0      | 220 LDIR ;COPIES CURRENT ROW TO PRECEDING ROW         |
| C1        | 230 POP BC                                            |
| 08        | 240 EX AF,AF'                                         |
| 3C        | 250 INC A ;INCREMENT ROW COUNTER                      |
| FEBF      | 260 CP 191 ;LOOP BACK UNTIL                           |
| 3BE7      | 270 JR C,ROW ;192 ROWS SCROLLED ONCE                  |
| C1        | 280 POP BC                                            |
| 10DD      | 290 DJNZ SCREEN ;LOOP BACK UNTIL WHOLE SCREEN DONE    |
| C9        | 300 RET                                               |



our problem. Start by considering the first two pixel lines. The addresses of the first character (column 0) of each is 4000H and 4100H respectively (which are the first two values in our address file). Each line being represented by 32 consecutive bytes of the display file from these addresses, LDIR can be used to copy the second line to the first by setting DE to 4000H and HL to 4100H with BC=32 for the byte count.

One snag with all block handling instructions (there are others as we shall see). They use up all three user register pairs HL, DE and BC. HL and DE are used repeatedly to point to the Spectrum's display file. In addition, we need a register pair to point to our own file, which can be incremented. BC is the only sensible choice, but it is tied up as a pixel count for the outer DJNZ loop. By PUSHing and POPping onto and off of the stack (lines 40 and 280), this leaves BC free for the inner loop. We must now arrange for BC to double up as our file pointer as well as the byte count for



LDIR.

Yet another slight complication. We need an inner loop counter to count each pixel row as it is moved up one pixel. Having released BC from the outer loop for two other jobs, we can hardly tie it up again on an inner DJNZ loop (remember the right and left scroll routines where we used two nested DJNZ loops?). The alternative is to use a jump instruction but we still need a counter. The A register is used in such cases and is free for the job, though again, it must double up because we will be using it as an intermediate register for getting our file addresses into HL and DE (see later).

Though the AF register pair can also be PUSHed and POPped (like BC), I have introduced an alternative device into the program called **Register Exchange**. The Z80 has an alternative register set which gives the m/c programmer a means of holding the



values in one or other of two sets. Line 50 (EX AF,AF) brings in the alternative AF pair (called AF') and line 60 initializes the alternative A register to zero for the inner loop counter.

Line 70 sets up BC to point to the start of our file (63000=F618H) and line 80 is the start of the inner ROW loop. The first step within this loop is to restore the normal AF pair with EX AF,AF' in order not to corrupt our loop counter by copying via the A register. As we have seen, we are unable to fetch two bytes in one go with our file pointer, BC. For example,

there is no such instruction as LD DE,(BC) to get the two bytes pointed to by BC into DE. It must be done one byte at a time via the A register. Thus, line 90 gets the first byte from the file (00H) and puts it in A. Line 100 then transfers this to the E register. Line 110 increments the file pointer so that lines 120 and 130 can put the next byte (40H) into D (again via the A

register). Now we have the display file address of the first line to be copied to in DE (note that E has to be loaded first because of the way we set up our file (low order byte first). Following execution up to and including line 200, the process is repeated for HL, so that DE and HL (for destination and base) contain 4000H and 4100H respectively on the first pass. Note that BC is PUSHed onto the stack in line 150. We need to free BC for the byte count in LDIR (line 210). PUSHing at this point holds our file pointer ready for the next loop.

All this preparation is finally consummated by the LDIR in line 210. BC can now be switched back to file pointer mode in line 230. We can also switch back to row counter mode for A (lines 240-250). The test for completing 192 rows (and jump back if not) is handled by lines 260-270. "CP 191" is read as 'ComPare the contents of the A register with 191'. This is really subtracting 191 from A, though only the flags in the F register are affected by the result. "JR C,ROW" is read as "Jump back Relative to instruction labelled ROW if the (C)arry flag is set". The Carry flag will be set if A contains a number which is less than or equal to 191.

Program 3 lists the SCROLL DOWN routine. The principles are exactly the same as in scrolling up, though now we start with BC pointing to the last location of our address file and work backwards. Note that D is now loaded before E and H before L when loading addresses in reverse.

#### Assembler

```

10 ;ASSEMBLER FOR PROGRAM 3- EXECUTES PIXEL SCROLL DOWN
20 ;
01C000 30      LD    BC,192 ;EXECUTES SINGLE PIXEL
C5      40 SCREEN PUSH BC ;SCROLL 192 TIMES
08      50      EX    AF,AF'
3E00    60      LD    A,0 ;INITIALIZE ROW COUNTER
0197F7 70      LD    BC,$F797 ;END OF COL 0 ADDRESSES
08      80 ROW  EX    AF,AF' ;START OF LOOP FOR 1 PIXEL SCROLL
0A      90      LD    A,(BC)
57      100     LD    D,A
0B      110     DEC   BC
0A      120     LD    A,(BC)
5F      130     LD    E,A ;DE HOLDS ROW TO BE COPIED TO
0B      140     DEC   BC
C5      150     PUSH  BC
0A      160     LD    A,(BC)
67      170     LD    H,A
0B      180     DEC   BC
0A      190     LD    A,(BC)
6F      200     LD    L,A ;HL HOLDS ROW TO BE COPIED FROM
012000 210     LD    BC,32 ;BC HOLDS NO. OF BYTES TO BE COPIED
EDB0    220     LDIR  ;COPIES CURRENT ROW TO PRECEDING ROW
C1      230     POP   BC
0B      240     EX    AF,AF'
3C      250     INC   A ;DECREMENT ROW COUNTER
FEBF    260     CP    191 ;LOOP BACK UNTIL
3BE7    270     JR    C,ROW ;192 ROWS SCROLLED ONCE
C1      280     POP   BC
10DD    290     DJNZ  SCREEN ;LOOP BACK UNTIL WHOLE SCREEN DONE
C9      300     RET

```



# HAPPY BIRTHDAY SINCLAIR

**SINCLAIR PROGRAMS** is celebrating its third birthday with this issue of the magazine. We began back in the dark ages of home computing, before the launch of the Sinclair Spectrum. The ZX-80 had already started the computing revolution and the ZX-81 had taken us one step further in the march towards everyone owning a personal computer. The Spectrum was launched in June 1982 and the idea of the computer being a hobbyist item was finally eroded.

*Sinclair Programs* was launched by ECC Publications, who sadly are no more, and is now part of the giant EMAP Business and Computer Publications.

We have taken this opportunity to look back with the firms who are over three years old and also to take a look at the new up and coming software houses.

In addition we are having a light-hearted competition involving some of the battle scarred but successful firms who have survived. We hope that all those firms whom we have not included, due to limits of space, will accept our apologies.

**ARTIC** have been in business since the summer of 1980 and claim the notorious distinction of having received national press coverage for one of their games, certain parts of which were slammed for their bad taste. Having weathered this they have also produced their fair share of quality games. Founder of the company, Richard Turner, while still a student produced the very first game, back in 1980 while preparing for his 'A' levels.

**5th year**

**FIREBIRD** was launched by that old bird British Telecom in a major bid to attack the growing software market. Started in October 1984 they have already carved themselves a niche in the market by producing cheap (sorry) games.

**1st year**

**OCEAN** have not been around for as long as us but they have more than made up for this by quickly buying up anything that moves, particularly the **US Gold** series of games and a chunk of **Imagine**. So busy are the staff in their empire building that they were not available for comment. All we can say is that every game they produce is almost guaranteed a spot in the top ten chart.

**2nd year**

**MELBOURNE HOUSE** began in 1978 as a general book and magazine publishing company. Following the success of a ZX-81 book they published they decided to turn their expertise towards computer publishing. Taking the theme of Tolkien's book **The Hobbit**, they launched their first software game, **The Hobbit**, the rest, as they say, is history.

**4th year**

**PRINT 'n' PLOTTER**, launched in 1981, soon realised that a new market was growing with the advent of the ZX-81 and they were able to exploit the limited graphics of this little machine. They produced graph boards which are even now essential additions for any programmer attempting serious computer graphic design on a Sinclair computer.

**4th year**

**MASTERTRONIC** began in April 1984. It was the first company to realize the potential of producing budget software. So far it has produced a tremendous sixty two games. **Finders Keepers** is an example of their games, and at £1.99 they are proving a popular choice with the software-buying public.

**2nd year**

**SILVERSOFT** began in 1981. Although they have been successful in both remaining around so long and producing games that sell well they have not allowed success to go to their heads. It is a long standing tradition in the office that anybody, from the managing director down, may fall victim to the office punishment — the Mickey Mouse hat. While they were unwilling to expand on what offences would be punished by wearing the hat the spokesman's tone of voice implied that perhaps one would not want to know!

**4th year**

**MIKRO-GEN** began trading in November 1981 through their own shop, and in the early days they also acted as a distribution company. They have enjoyed success with games such as **Witch's Cauldron**, and the continuing series of Wally games.

One real life Wally arrived with his computer and peripherals which he duly set up. The tape had been running for a minute when he switched it off, and announced, "See, I told you it wasn't working." An explanation was sought and he replied "Well, I only want to play the first part!"

**4th year**





# R PROGRAMS



**S**OFTWARE FARM were sipped at the post with a start date of August 1982. Julian Chappel and his brother began working on industrial processes at their parent's farm, hence the name of the company. Julian calculated that the demand for ZX-81 software would not decline despite the arrival of the Spectrum. The company started work on the ZX-81 games as everybody else began to switch their resources to the new machine. Software Farm have not only survived as the only company producing games for the ZX-81 but they are very successful. For the future Julian wants to keep the company "Small but beautiful" and will continue with the one man campaign against the bigger machines, so loyal fans of such games as **Fortyniner** and **Rocketman** can expect a bright future.

**3rd year**

**D**IGITAL INTEGRATION are members of the three year oldie club. They are continually amazed by their customers' ingenious interpretations of the company name, examples include Disintegration, Distant Relation, and Digital Investigation. They have produced two smash hit games so far, **Fighter Pilot** and **Night Gunner** and promise two new games.

**3rd year**

**Q**UESTION: What have Margaret Thatcher and **Kempston Micro** got in common? **Answer:** They both began above a grocer's shop. Started three years ago, Kempston immediately began working on Spectrum peripherals. They also produced one game, entitled **Mission Mars**, but it never got off the ground!

**4th year**

**A** CONVERSATION over tea in **Wimpys**, Stratford upon Avon, was the setting for the beginning of **Hewson Consultants**. Andrew Hewson, founder of the company, was travelling from Manchester to Oxford with his boss when they stopped for a cup of tea at the Wimpey Bar. He explains "It was the summer of 1980 and the ZX-80 had just been launched. My boss was very impressed with the machine, while I dismissed it out of hand. However, his words 'Look at its price, its a winner' stayed in my mind." Andrew continued working as a statistician but "pondered the words of wisdom." He eventually ordered a machine and thus finally reached his true destination.

**5th year**



**Z**ANY AUTOMATA have been in business since 1977, although they were not in software publishing at that time. Mel Croucher began his career as an architect and teamed up with fellow director Christian Penfold to work on various projects, one of which was a beer quiz for a radio programme. **Automata UK**, the software publishers, began operating in November 1982. They have been such a successful combination that they are decreasing their number of staff. Don't let this fool you because they achieved pre-tax profits of over £7,000 at their last audit. Their hits include **Deus Ex Machina**, the **Pi-man** series and the advertising campaign which rivals some (not ours, of course!) magazine editorial.

**3rd year**

**T**HE GOOD old **Microfair** was there right at the start with the first show held in September 1981. While public demand for the shows continues the bigger software companies appear to have developed the Howard Hughes syndrome. Mike Johnstone, organiser of the fairs, believes that the Microfair will survive anything. This statement was proved by the show held in February of this year. As the country experienced the worst of a British winter people travelled to the show from all over the country. Over 6,000 visitors were recorded despite fears that the bellowing snow storms would stop people attending.

**4th year**

**N**EW GENERATION are over three years old and their new office, a coach-house, is even older, 100 years old in fact. When they made their attempt to buy it surveyors were, of course, called to evaluate the building. Upon seeing the state of it they refused to go onto the upper floors. Eventually this was resolved, the building bought and builders bought in to restore it. Business is good and they have continued to keep a roof over their heads.

**4th year**

**C**REATIVE SPARKS is Thorn EMI's contender in the software publishing market. Started in April 1984, they have already produced forty two games. Perhaps they are best known for the **Dangermouse** titles. Generally sparking (oops!) they are going for the two extremes in the market, that of low-priced games and more expensive, high-quality software. Future material will probably be influenced by films and music.

**2nd year**



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# BIRTHDAY 3RD ISSUE COMPETITION

Some of the best software and hardware companies have agreed to help you to help us to celebrate our birthday. **Melbourne House, MikroGen, New Generation, Silversoft, Artic, Kempston, Hewson Consultants, Print 'n' Plotter** and **Digital Integration** have all donated some of their oldest products and some of their newest products as prizes in our Third Birthday Competition.

Prizes range from a **Kempston Formula 2 joystick**, to fifty sets of free tickets to the **ZX Microfair** to the earliest games produced by **Artic Computing**. **Hutchinson Publishing Group Ltd** have agreed to help put winners in the right mood by donating 10 copies of **Fred Pipes' book 101 Things to do with a dead computer**.

As you can see, there are some very good prizes to be won, and some very silly prizes to be won. Prizes will be awarded to the first 140 correct entries drawn from the bag.

## 140 PRIZES

**To enter:** Use your skill, judgement and, above all, your good sense, to choose the correct answers to the following ten questions. Write your answers (and number them) on a postcard together with your name, address and name of the computer you own. Send the postcard to us at Birthday Competition, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1 to arrive on or before May 31st, 1985.

**Question 1.** Who wrote **The Hobbit** book?

- A. Tolstoy
- B. Tolkien
- C. What Book

**Question 2.** In **Travel with Trashman** how many countries does trashman visit?

- A. Lots
- B. One
- C. Thirteen

**Question 3.** What does ULA mean in computing terms?

- A. United life assurance
- B. Uncommitted Logic Array
- C. Something to do with a television

**Question 4.** What is the maximum amount of memory that can be addressed by the Z80 CPU?

- A. Zillions
- B. 64k
- C. 20k

**Question 5.** Name the title of the only game **Kempston Micro Products** produced?

- A. Joystick Johnny
- B. Mission Mars
- C. They didn't produce one

**Question 6.** Which one of the following was **Mikro-Gen's** first Spectrum program?

- A. Wally Waltz
- B. Dice Champion
- C. Masterchess

**Question 7.** In which of the following towns did the founder of **Hewson Consultants** drink tea in a Wimpy Bar and discover his future?

- A. Luton
- B. Stratford-upon-Avon
- C. New Delhi

**Question 8.** Who organises the **ZX Microfairs**?

- A. Sir Clive Sinclair
- B. Mike Johnstone
- C. Mike Reid

**Question 9.** Name the first program **Digital Integration** produced for the ZX-81.

- A. Spectrum Fun
- B. Fighter Pilot
- C. Gone with the Wind

**Question 10.** What does the 'N' stand for in **Print 'N' Plotter**?

- A. Norris
- B. And
- C. Noddy

Employees of EMAP and of all companies participating in the competition are not eligible to enter. The editor's decision in all matters concerning the competition is final.





|                      |                   |
|----------------------|-------------------|
| 1 Knight Lore        | Ultimate          |
| 2 Decathlon          | Ocean             |
| 3 Doomdark's Revenge | Beyond            |
| 4 Underwurlde        | Ultimate          |
| 5 Ghostbusters       | Activision        |
| 6 The Pyramid        | Fantasy           |
| 7 Jet Set Willy      | Software Projects |
| 8 Doomsday Castle    | Fantasy           |
| 9 Pyjamarama         | Mikrogen          |
| 10 Matchday          | Ocean             |

## HEIGHTS

## DEPTHS

|                       |                  |
|-----------------------|------------------|
| 1 Transylvanian Tower | Richard Shepherd |
| 2 3D Tunnel           | New Generation   |
| 3 Airwolf             | Elite            |
| 4 War of the Worlds   | CRL              |
| 5 Espionage Island    | Artic            |

To register your votes, let us know the program you like most, and the program you hate most. Add your name and address, which will make you eligible for the £10 chart prize. Send your votes to CHARTLINE, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

Winner of this month's chart prize is D Shearstone-Walker of Eastbourne, East Sussex.



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B ☐ debit my Barclaycard/Access Account★  
C ☐ Name \_\_\_\_\_  
D ☐ Address \_\_\_\_\_  
E ☐ \_\_\_\_\_  
F ☐ \_\_\_\_\_  
\_\_\_\_\_★



**A**  
Fast-furious racing in this Arcade game for the Spectrum. 'Pontoon' on side B free!



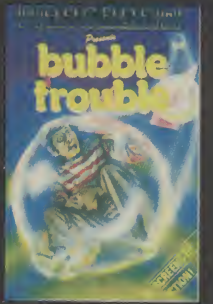
**B**  
Funny goings-on deep in a mine. Can you escape the evil in its depths? "Original and fun . . . dexterity needed . . . strategy is also involved" — Games Computing.



**C**  
Defuse a bomb hidden on the complex planet, Lattica, before it blows!! "... action packed game... addictive" — Sinclair user.



**D**  
The mobs out to get ya' in this no-holds-barred 25 screen, action-packed game. "Tricky and highly entertaining" — Personal Computing News.



**E**  
50 different screens of mayhem. "A fun game for all ages . . . which I thoroughly enjoyed." — Home Computing Weekly.

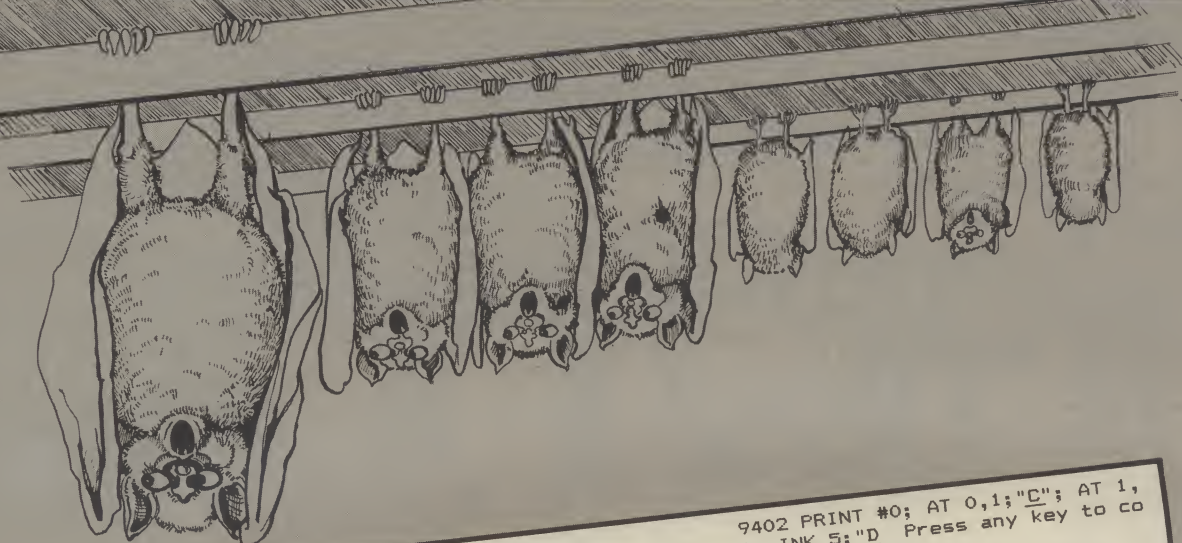












```

)-1: LET d= INT ( RND *32): LET
x=19: LET y=0: LET x1=x: LET y1=
y: LET a=2: LET b= INT ( RND *32
)
8510 PRINT #0; PAPER 1; INK 4; A
T 0,0;"(ig5)
(q5:ig5)"

```

```

(g5:g5)
8515 PRINT #0; INK 6; PAPER 1; A
T 0,4;"SCORE 00000"; INK 5; AT 1
,1;"HI SCORE 00000"; INK 4; AT 1
,20;"LIVES"
8516 PRINT #0; AT 0,15- LEN STR
$ 5; INK 6; PAPER 1;s; AT 1,15-
LEN STR$ h; INK 5; PAPER 1;h
8590 OVER 1: INK 8: PAPER 8
8700 LET i=1: PRINT AT x,y;a$(i
); AT x+1,y;b$(i); AT a,b;"K"; A
T c,d;"K"
8705 PRINT #0; AT 0,25;; FOR j=1
TO 1: PRINT #0; PAPER 1;" A";:
NEXT j
8710 PRINT #0; AT 1,25;; FOR j=1
TO 1: PRINT #0; INK 5; PAPER 1;
" B";: NEXT j
8715 IF g=1 THEN FOR j=63000 TO
63007: BEEP .1,( PEEK j)-40: FO
R i=1 TO 20: NEXT i: NEXT j: LET
z=z+1
8716 IF g=1 THEN LET f=f+1: IF
f<5 THEN GO TO 8000
8717 IF f=5 THEN GO TO 8800
8720 FOR i=63000 TO 63063
8721 LET n=( PEEK i)-40
8725 BEEP .1,n
8730 IF INKEY$ =m$(2) THEN GO
TO 2000
8780 NEXT i: GO TO 8720
8800 IF PEEK 63000 <> 17 THEN
RESTORE 9540: FOR i=63000 TO 63
63: READ n: POKE i,n: NEXT i
9000 OVER 0: CLS
9004 INK 5: RESTORE 9520
9010 PRINT AT 1,3;"HE"; AT 2,
"HAUNTED"; AT 3,2;"BELLTOWER"
9013 PLOT 11,169: DRAW 27,0:
T 21,168: DRAW 0,-7
9015 PLOT 86,145: DRAW 7,-7:
W 3,0: DRAW 0,3: DRAW -85,0
9090 PLOT 0,0: DRAW 255,0: DR
0,175: DRAW -255,0: DRAW 0,-
9092 PLOT 64,0: DRAW 17,112:
W 2,-24: DRAW 24,22

```

```

9100 PLOT 102,0
9110 FOR m=1 TO 5: READ i,j: DRA
i; INK 7
9110 FOR m=1 TO 5: READ i,j: DRA ntinue"
9440 PA 9440 PA
W i,j: NEXT m 9455 IF
9130 PLOT 165,44: DRAW 90,-44 9455 IF
9132 FOR m=1 TO 6: READ i,j: PLO TO 9455
T 64+i,j: DRAW -2,12: DRAW 4,4: 9460 C
DRAW 4,-8: DRAW 2,-12: DRAW -7,3 9520 D
: NEXT m 4,18,
9140 FOR m=1 TO 2: READ i,j: PLO 9521 I
T i+64,j: DRAW 1,12: DRAW 3,8: D 9522
RAW 3,-4: DRAW -1,-12: DRAW -5,- 9525
4: NEXT m 9540
9144 PRINT INK 2; AT 11,21;"K" 7,19,
9145 PLOT 164,60: DRAW -35,44,4. 46,58
5 9541
9147 LET f=0: LET g=0: INK 7 6,22
9148 PRINT #0; AT 1,1; INK 2;"0= 9542
SCREEN DEMO 1=START GAME" 9,31
9150 FOR i=63063 TO 63000 STEP - 980
1: LET n=( PEEK i)-40 980
9157 BEEP .13,n 980
9158 IF INKEY$ <> "" THEN GO 980
TO 9160 980
9159 NEXT i: GO TO 9150 DE
9160 IF INKEY$ = "O" THEN LET g 98
=1: GO TO 6005 98
9170 IF INKEY$ = "1" THEN GO TO d
6005 98
9175 GO TO 9150 97
9200 CLS : PRINT INK 3; AT 0,0; 9
"K THE HAUNTED BELLTOWER 0
" 9
9201 PRINT INK 5; AT 4,0;"The m taken
ischievious ghosts have them
down the bells and left
GO lying all' around."
9205 PRINT INK 6; "Help the rab
bit to collect them.Each bell he
picks up will fly to it's prop
er place."
THEN TO 630.
i 9206 PRINT INK 4;"If he collec
ts them all, he can pass through
the door on the topplatform to
the next room."
AT 2,2;
NER" 9207 PRINT INK 5;"There are 5
0: PLO different rooms."
-7: DRA 9208 GO SUB 9400
5,0 let the bats bite him or he wi
0: DRAW 11 turn into a bat too !"
0,-175 9211 PRINT INK 4; AT 11,10;"K
112: DRA K K"
9220 GO SUB 9400: RETURN

```

```

9402 PRINT #0; AT 0,1;"C"; AT 1,
1; INK 5;"D Press any key to co
ntinue"
9440 PAUSE 1: PAUSE 0
9455 IF INKEY$ <> "" THEN GO
TO 9455
9460 CLS : RETURN
9520 DATA 6,138,5,-28,38,-21,2,2
4,18,-112
9521 DATA 51,84,66,76,81,68
9522 DATA 110,20,125,12,140,4
9525 DATA 16,63,29,73
9540 DATA 17,29,41,53,53,41,29,1
7,19,31,43,55,53,43,31,19,22,34,
7,19,31,43,55,53,43,31,19,22,34,
46,58,58,46,34,22,24,36,48,60
9541 DATA 60,48,36,24,24,60,48,3
6,22,58,46,34,19,55,43,31,17,53
9542 DATA 41,29,53,17,29,41,55,1
9,31,43,58,22,34,46,60,24,36,48

```

```

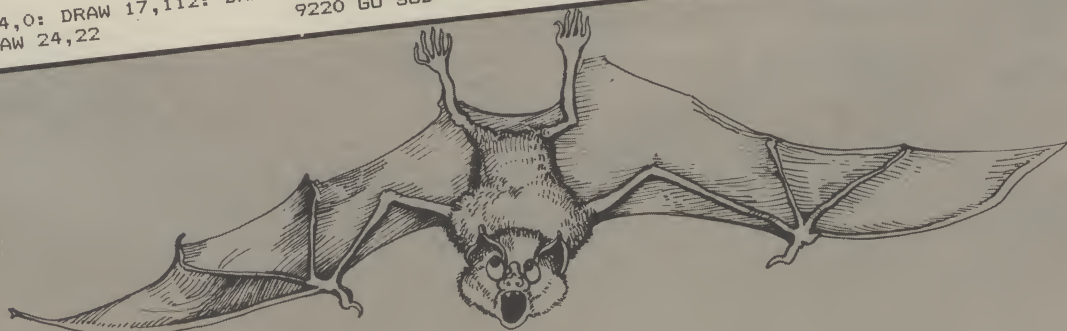
9804 INK 3
9805 RESTORE 9860: READ nk
9807 LET m$="": CLS
9808 PRINT AT 4,3;"CHOOSE USER
DEFINED KEYS: ".....";
9810 FOR i=1 TO nk
9811 READ d$: PRINT "
d$": NEXT i: INK 6
9815 RESTORE 9860: READ nk
9816 PRINT AT 0,0:; PRINT .....
9818 FOR i=1 TO nk: READ d$
9819 LET m$=m$+ CHR$ 0
9820 PRINT "
";d$;
9822 FOR j=1 TO 12- LEN d$: PRINT
T " "; NEXT j
9825 PRINT FLASH 1;"?"; CHR$ 8;

```

```

9825 PAUSE 1: PAUSE 0
9830 LET k$= INKEY$
9832 FOR j=1 TO LEN m$
9833 IF m$(j)=k$ THEN GO TO 982
7
9834 NEXT j
9840 LET m$(i)=k$: PRINT k$: BEE
P .05,30: NEXT i: INK 7
9858 IF INKEY$ <> "" THEN GO
TO 9858
9859 RETURN
9860 DATA 3,"LEFT","RIGHT","CLIM
B ROPE"

```











```

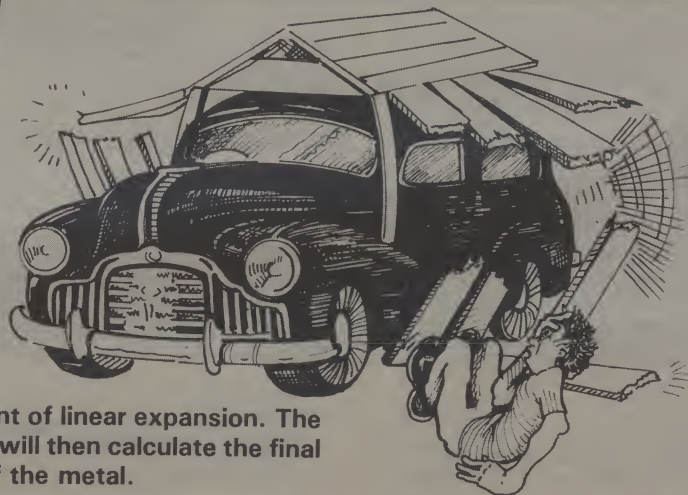
500 PRINT "INFERNO"
510 PRINT
520 PRINT "YOU ARE A FIREMAN SH
OWN BY A AND YOUR JOB IS TO RESCU
E AS MANY PEOPLE AS POSSIBLE F
ROM THE 17TH FLOOR OF A TOWER BLO
CK. THE 16TH FLOOR IS ALREADY ABL
AZE AND THE FIRE IS BREAKING THRO
UGH EVERYWHERE."
530 PRINT "FLAMES ARE SHOWN BY
PEOPLE BY YOU MUST AVOID THE F
IRE AND FIND AS MANY PEOPLE AS PO
SSIBLE BEFORE THE TIME ALLOWED
REACHES ZERO WHEN THE FLOOR
COLLAPSES ENGULFING
EVERYONE."
534 GOSUB 600
540 PRINT "ONCE YOU HAVE ROUNDE
D UP THOSE PEOPLE YOU CAN RESCU
E YOU CAN EXIT, UNFORTUNATELY Y
OU DO NOT KNOW WHERE IT IS, BUT
YOU ARE GIVEN DIRECTIONS FRO
M A FLOORPLAN GUIDANCE COMPUT
ER SUCH AS NORTHWEST WHICH TELL
YOU THAT TO REACH THE EXIT AN
D ESCAPE THE FLAMES MOVE NORTHWE
ST."
550 PRINT "THOSE PEOPLE YOU RES
CUE AND YOURSELF CAN MOVE ALONG
CORRIDORS ONLY BY USING KEYS S
678 TO MOVE WEST SOUTH NORTH AND
EAST."
555 GOSUB 600
560 PRINT "YOU ARE SHOWN AT ALL
TIMES WHERE YOU ARE, WHERE PEOPLE
TO BE SAVED ARE, WHERE THE FIRES
ARE, THE TIME REMAINING BEFORE THE
FLOOR COLLAPSES AND THE NU
MBER OF PEOPLE TO BE RESCUED."
565 PRINT "YOU HAVE 5 MINUTES (
300 SECS) TO CARRY OUT THE RES
CUE."
568 PRINT "TO BE A TOP FIRE HER
O YOU MUST FIND AND SAVE THE MO
ST PEOPLE. GOOD LUCK, HERO."
570 PRINT
578 PRINT "PLEASE WAIT FOR THE
FLOOR-PLAN TO BE CONSTRUCTED"
579 GOSUB 600
580 CLS
590 RETURN
600 PRINT AT 21,0; "PRESS
KEY TO CONTINUE"
610 INPUT A$
620 CLS
630 RETURN
  
```

## METAL EXPANSION

Check your physics home work with **Metal Expansion**, written for the Spectrum or Spectrum Plus by Gary Meakin of Clifton, Nottingham.

A metal expands and contracts at a uniform rate when subjected to changes of temperature, providing its elastic limit is not exceeded. Give the original length and temperature of your metal, together with its final temperature and its

coefficient of linear expansion. The program will then calculate the final length of the metal.



```

100 CLS : BORDER 4: PAPER 4: BR
IGHT 1: CLS : PAPER 4: BRIGHT 1
  
```

```

190 INK 7
200 PRINT "M E T A L   E X P A N
S I O N"
205 PRINT AT 0,0; OVER 1; "-----"
  
```

```

206 INK 0
210 PRINT : PRINT "A metal expa
nds and contracts at a uniform
rate when subjected to changes o
f temperature- PROVIDING IT
S ELASTIC LIMIT IS NOT EXCEEDED"
  
```

```

225 BEEP .1,10
1010 PRINT AT 7,0; "CALCULATING
LINEAR CHANGES"
1020 PRINT AT 9,0; "Enter Origin
al Metal Length"
1030 INPUT La
  
```

```

1040 PRINT AT 9,0; "La = ";La;
TAB 15;"mm"
1050 BEEP .1,10
1060 PRINT "Enter Initial Temper
ature"
1070 INPUT Ta
1080 PRINT AT 10,0; "Ta = ";Ta;
TAB 15;"degrees c"
1090 BEEP .1,10
1100 PRINT "Enter Final Temperat
ure"
1110 INPUT Tf
1120 PRINT AT 11,0; "Tf = ";Tf;
TAB 15;"degrees c"
1130 BEEP .1,10
1140 PRINT "Enter Coefficient of
Expansion"
1145 INPUT Co
1150 PRINT AT 12,0; "Co = ";Co;
TAB 15;"1/100"
1160 BEEP .1,10
  
```

```

1200 LET Exp=(Tf-Ta)*Co*La
1205 INK 7
1210 PRINT AT 16,0; "INCREASE=";
Exp;" mm"
1220 BEEP .1,10
1230 LET Ext=Exp+La
1240 PRINT AT 17,0; "NEW LENGTH=";
Ext
1250 BEEP .1,10
1260 COPY
1265 INK 0
1270 PRINT AT 20,0; "ANOTHER CAL
CULATION Y Yes N No"
1280 IF INKEY$ ="y" THEN GO TO
100
1290 IF INKEY$ ="n" THEN CLS :
STOP
1300 GO TO 1280
9000 SAVE "metalex" LINE 100
  
```



# ODD ONE OUT

**T**est your powers of observation with *Odd One Out*, written for the Spectrum or Spectrum Plus.

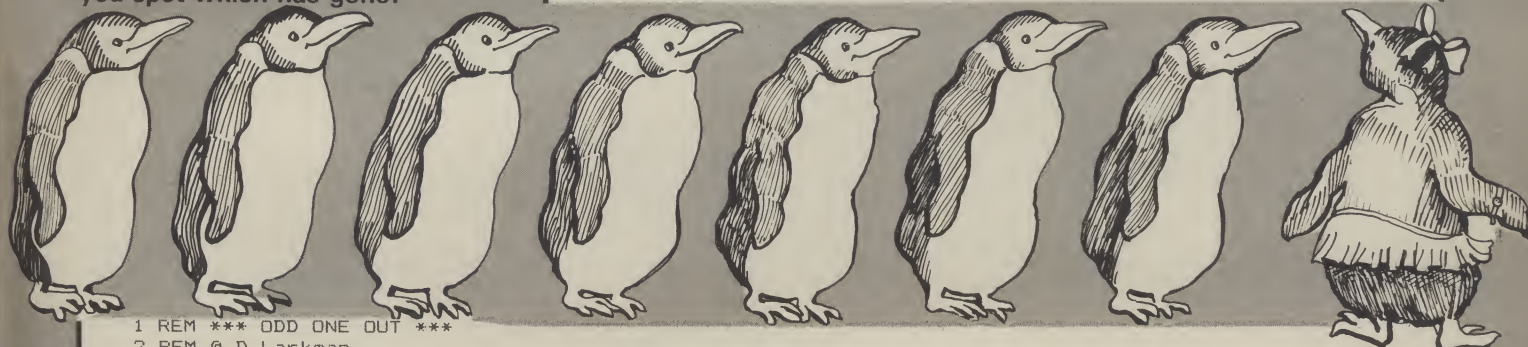
A number of objects will be displayed on screen. Memorise their positions and then press any key. The objects will be displayed, but one will have been removed. Can you spot which has gone?

```

70 IF a=5 THEN PRINT AT x4,z
4;" "
75 IF a=6 THEN PRINT AT x5,z
5;" "
80 IF a=7 THEN PRINT AT x6,z
6;" "
85 IF a=8 THEN PRINT AT x7,z
7;" "
90 IF a=9 THEN PRINT AT x8,z
8;" "
95 IF a=10 THEN PRINT AT x9,
z9;" "

```

the missing object. If you name it correctly you score 1 point: PRINT #1;"Press a key to continue": PAUSE 0: PAUSE 0  
8020 CLS : PRINT AT 0,6;"The objects"  
8030 PRINT AT 2,0;"A=crab"; AT 4,0;"B=man"; AT 6,0;"C=ball"; AT 8,0;"D=star"; AT 10,0;"E=shoe"; AT 12,0;"F=face"; AT 14,0;"G=moon"; AT 16,0;"H=car"; AT 18,0;"I=ship"; AT 20,0;"J=ring"



```

1 REM *** ODD ONE OUT ***
2 REM @ D Larkman.
5 CLS
10 GO SUB 9000
20 GO SUB 8000
25 LET score=0
30 LET a= INT ( RND *10)+1
35 LET z= INT ( RND *31): LET
x= INT ( RND *21): LET z1= INT (
RND *31): LET x1= INT ( RND *21
): LET z2= INT ( RND *31): LET x
2= INT ( RND *21): LET z3= INT (
RND *31): LET x3= INT ( RND *21
): LET z4= INT ( RND *31): LET x
4= INT ( RND *21): LET z5= INT (
RND *31): LET x5= INT ( RND *21
): LET z6= INT ( RND *31): LET x
6= INT ( RND *21): LET z7= INT (
RND *31): LET x7= INT ( RND *21
): LET z8= INT ( RND *31): LET x
8= INT ( RND *21): LET z9= INT (
RND *31): LET x9= INT ( RND *21
)
36 PRINT AT x,z;"A": PRINT A
T x1,z1;"B": PRINT AT x2,z2;"C"
: PRINT AT x3,z3;"D": PRINT AT
x4,z4;"E": PRINT AT x5,z5;"F"
: PRINT AT x6,z6;"G": PRINT AT
x7,z7;"H": PRINT AT x8,z8;"I"
: PRINT AT x9,z9;"J"
37 PRINT #1;"Press a key": PAU
SE 0: CLS : PAUSE 50
40 PRINT AT x,z;"A": PRINT A
T x1,z1;"B": PRINT AT x2,z2;"C"
: PRINT AT x3,z3;"D": PRINT AT
x4,z4;"E": PRINT AT x5,z5;"F"
: PRINT AT x6,z6;"G": PRINT AT
x7,z7;"H": PRINT AT x8,z8;"I"
: PRINT AT x9,z9;"J"
50 IF a=1 THEN PRINT AT x,z;
" "
55 IF a=2 THEN PRINT AT x1,z
1;" "
60 IF a=3 THEN PRINT AT x2,z
2;" "
65 IF a=4 THEN PRINT AT x3,z
3;" "

```

```

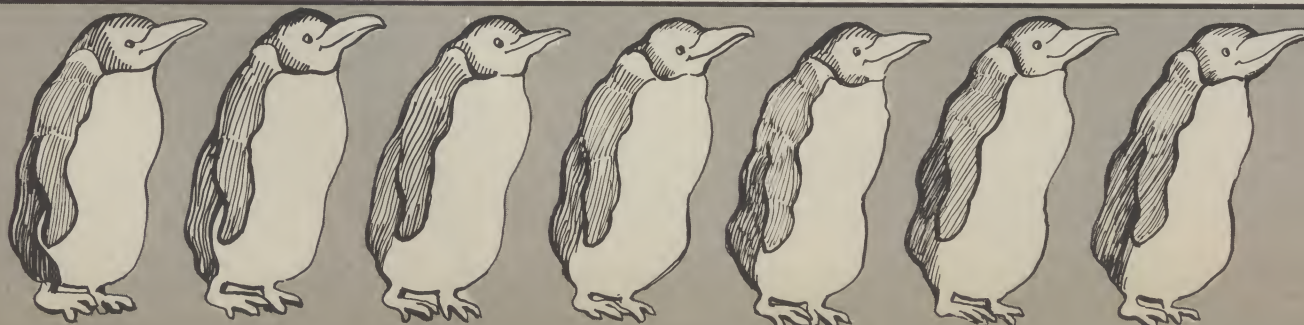
100 INPUT "What's missing ";a$
105 IF a$="crab" AND a=1 THEN
GO TO 200
110 IF a$="man" AND a=2 THEN G
O TO 200
115 IF a$="ball" AND a=3 THEN
GO TO 200
120 IF a$="star" AND a=4 THEN
GO TO 200
125 IF a$="shoe" AND a=5 THEN
GO TO 200
130 IF a$="face" AND a=6 THEN
GO TO 200
140 IF a$="moon" AND a=7 THEN
GO TO 200
150 IF a$="car" AND a=8 THEN G
O TO 200
160 IF a$="key" AND a=9 THEN G
O TO 200
170 IF a$="ring" AND a=10 THEN
GO TO 200
180 GO TO 300
200 CLS : LET score=score+1: PR
INT AT 0,10; FLASH 1;"CORRECT!!
"; FLASH 0: PRINT AT 2,2;"You'v
e scored ";score;" up to now": P
RINT #1;"Press a key to continue
": PAUSE 0
210 CLS : GO TO 30
300 CLS : BEEP .2,-10: BEEP .2,
-30
310 PRINT AT 0,10;"WRONG!!"
320 PRINT AT 2,2;"But you got
";score;" points"
330 PRINT AT 21,0;"Play again
(y/n)"
340 PAUSE 0: IF INKEY$ ="y" TH
EN CLS : GO TO 25
350 STOP
8000 CLS
8005 PRINT AT 0,6;"ODD ONE OUT"
8010 PRINT AT 2,0;"The object i
s to find the odd one out. You
do this by inputting the name of

```

```

8040 PRINT #1;"Press a key to pl
ay": PAUSE 0: PAUSE 0: CLS : RET
URN
9000 FOR a= USR "a" TO USR "j"+
7
9010 READ b: POKE a,b
9020 NEXT a
9030 DATA BIN 01100110, BIN 010
0010, BIN 01000010, BIN 0011110
0,255, BIN 01111110, BIN 1010010
1, BIN 00100100
9040 DATA BIN 00111100, BIN 001
11100, BIN 00011000,255, BIN 101
11101, BIN 10111101, BIN 0010010
0, BIN 01100110
9050 DATA 0,0, BIN 00111100, BIN
01111110, BIN 01111110, BIN 011
11110, BIN 00111100,0
9060 DATA BIN 00010000, BIN 100
10010, BIN 01010100, BIN 0011100
0, BIN 00111000, BIN 01010100, B
IN 10010010, BIN 00010000
9070 DATA BIN 01110000, BIN 011
10000, BIN 11110000,255,255, BIN
11001111,0,0
9080 DATA 0, BIN 11111110, BIN 1
0010010, BIN 11111110, BIN 11101
110, BIN 11111110, BIN 11000110,
BIN 01111100
9090 DATA 0, BIN 00111000, BIN 0
1111000, BIN 11000000, BIN 11000
000, BIN 11111000, BIN 0111000,0
9100 DATA 0,0, BIN 1111100, BIN
10000100,255,255,255, BIN 011001
10
9110 DATA BIN 00010100, BIN 001
10100, BIN 01110110, BIN 1111011
1, BIN 00001000,255, BIN 0111111
0, BIN 00011000
9120 DATA BIN 00011000, BIN 000
11000, BIN 00111100, BIN 0100001
0, BIN 01000010, BIN 01000010, B
IN 01000010, BIN 00111100
9130 RETURN

```







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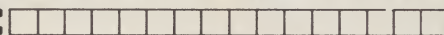
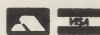
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